AQUASYNC
INNOVATION

YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

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SHIP CYBERSECURITY SOLUTION

Made available for
UR E27 (Rev.1) Cyber resilience of on-board systems and equipment
UR E26 (Rev.1) Cyber resilience of ships

DNV ABS Lloyd's Register CCS KR RINA ClassNK

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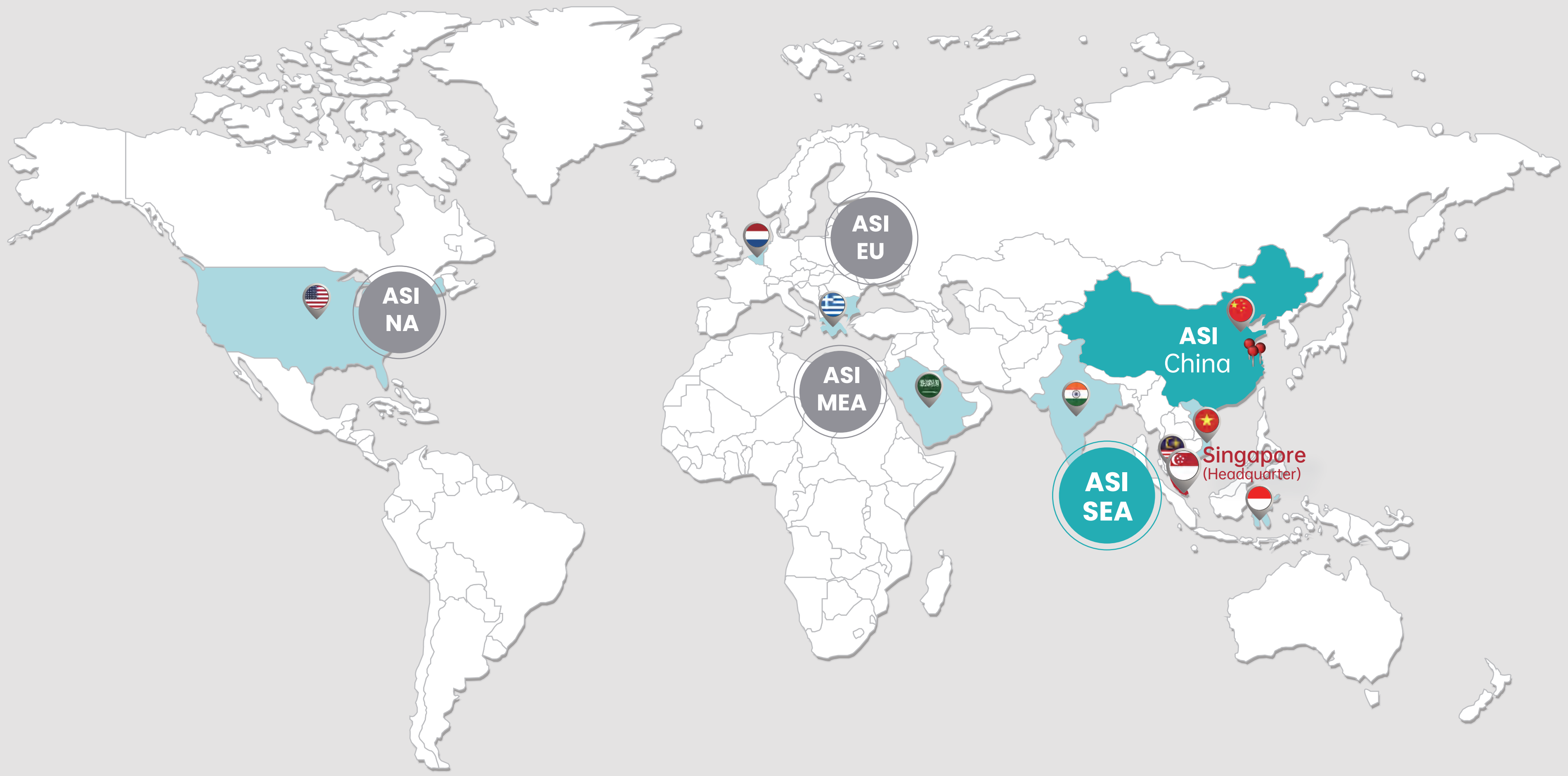
Company Profile

AquaSync Innovation (hereinafter referred to as ASI) provides a full package of solutions for comprehensive automation, intelligence, integrated ship-shore information and ship cyber security etc. in marine and offshore industries through cutting-edge technology, empowers the global maritime industry. Our advanced solutions ensure safe, reliable, efficient performance and promote the rapid sustainable development of the maritime industry's digitalization process.

ASI has obtained the **DNV-issued ISO 9001** Quality Management System, **ISO/IEC 27001** Information Security Management System, **ISO/IEC 20000-1** Information Technology Service Management System certificates, and the **ISO/IEC 17025** Marine Cyber Security Laboratory Test Capability Recognition.

- Integrated Gauging Monitoring-Alarm and Controlling System
- Informatization Integrated Solution
- Intelligent ship system
- Ship-Shore Fleet Management System
- Ship Cybersecurity Solutions
- Sensor Transmitters, Valves, Flow Meters and Other Underlying Hardware

Global Presence & Headquarters Map



ASI China
- Hangzhou, Zhejiang
- Wuxi, Jiangsu Province
- Shanghai

ASI SEA
- Singapore
- India
- Malaysia
- Vietnam
- Indonesia

ASI EU
- Netherlands
- Greece

ASI MEA
- Saudi Arabia

ASI NA
- America

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Interpretation of Ship Cybersecurity Standards

02

IACS UR E26&E27

	IACS UR E26 (Ship Cyber Resilience)	IACS UR E27 (On-Board Systems Cyber Resilience)
Scope	Whole-Ship Cyber Resilience (Ship Level)	Individual CBS Certification (System & Equipment Level)
Core Objective	Secure and Dependable Maritime Transport	CBS & Equipments
Key Requirements	① Identify ② Protect ③ Detect ④ Respond ⑤ Recover	① Identification and Authentication ② Access Control ③ System Integrity ④ Data Confidentiality ⑤ Restricted Data Flow ⑥ Timely Response to Events ⑦ Resource Availability
Certifications	- ISO/IEC 17025(DNV&CNAS) - Personnel: CISSP - ISO/IEC 27001 :2022 - ISO/IEC 20000-1:2018	- IEC 62443-4-1 & 4-2 & 2-4 - IACS UR E10 - ISO/IEC 27001 :2022 - ISO/IEC 20000-1:2018
Testing Requirements	Whole-Ship Cyber Resilience Testing	Individual Equipment Functionality & Security Testing
Deliverables	- Approved supplier documentation - Zones and conduit diagram - Cyber security design description - Vessel asset inventory - Risk assessment for the exclusion of CBSs - Description of compensating countermeasures - Ship cyber resilience test procedure - Ship cyber security and resilience program	- CBS Asset Inventory - Topology Diagrams - Description of Security Capabilities - Test Procedure for Security Capabilities - Security Configuration Guidelines - Secure Development Lifecycle - Plans for Maintenance and Verification - Information Supporting Incident Response and Recovery Plans - Management of Change Plan - Test Reports

" Effective Period: Ships Contracted for Construction on or After 1 July 2024."

Applicable Ship Types

Passenger Ships

All Tonnages

Passenger ships engaged in international voyages (Including high-speed passenger ships).

Mobile Offshore Drilling Units

500 GT+

Mobile offshore drilling units with a gross tonnage of 500 GT or more.

Cargo & High-Speed Vessels

500 GT+

Cargo ships of 500 GT or more engaged in international voyages & High-speed vessels of 500 GT or more engaged in international voyages.

Self-Propelled Construction Units

Specialized Units

Self-propelled offshore construction units (such as those for wind turbine installation and maintenance, crane units, drilling tenders, accommodation units, etc.)

Main Classification Society Registration Symbols

China Classification Society（CCS）

The Additional Notation for Ship Cybersecurity.	The Ship Cyber Resilience Level.	
	Ship-Level	CBS-Level
M	Compliant With Cyber Risk Management.	-
P	SL0（Corresponding to IACS UR E26）.	SL0（Corresponding to IACS UR E27）.
S	SL1	SL1
	SL2	SL2
	SL3	SL3
	SL4	SL4

Det Norske Veritas（DNV）

Class Notation（Default Suc）	Security Profile	Class Notation（Additional Systems）
Cyber Secure	SP0	（+）
Cyber Secure（Essential）（Corresponding to IACS UR E26 & E27）.	SP1	
	SP2	
Cyber Secure（Advanced）	SP3	
	SP4	

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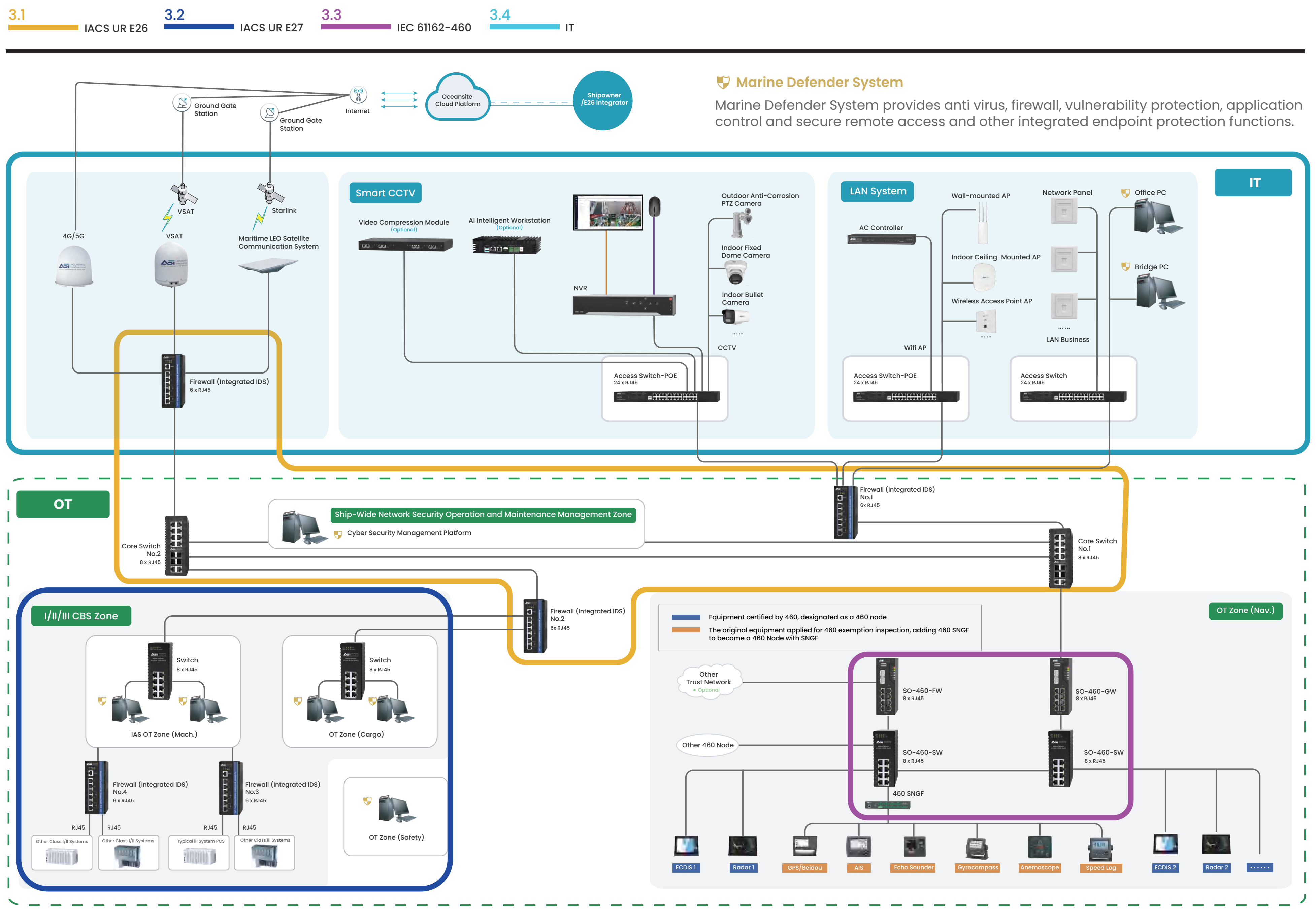
Ship Cybersecurity (IT+OT) Solution



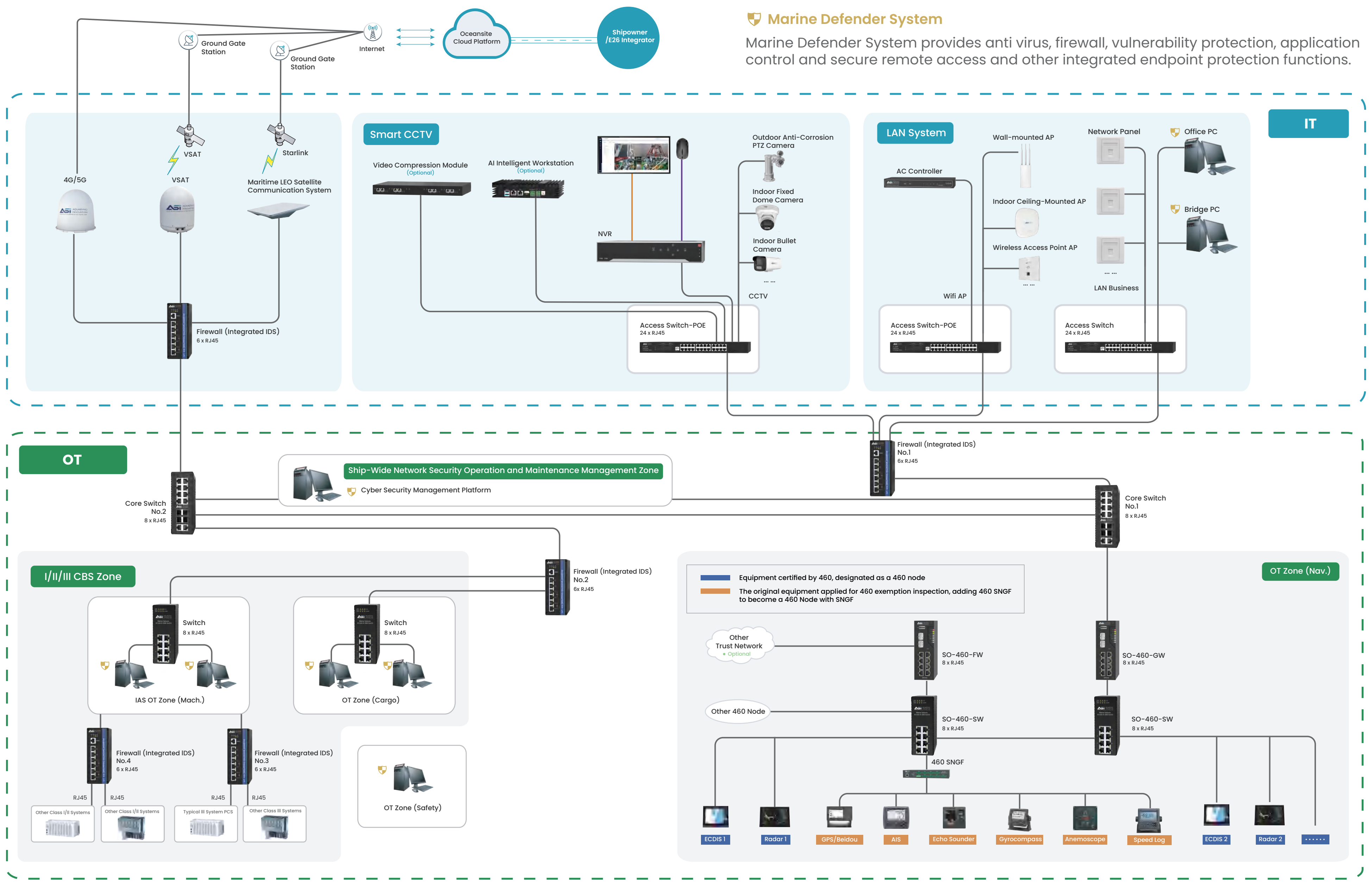
Marine Defender System

Marine Defender System provides anti virus, firewall, vulnerability protection, application control and secure remote access and other integrated endpoint protection functions.

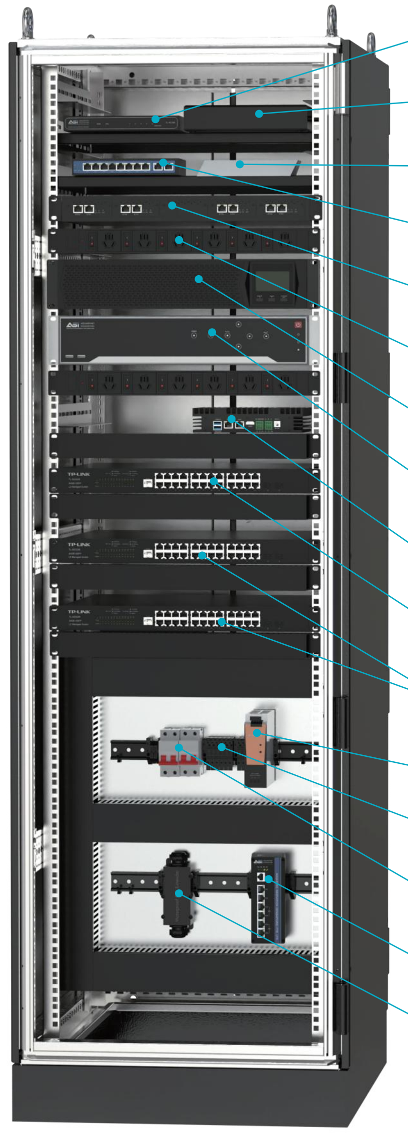
Ship Cybersecurity (IT+OT) Solution

Marine Defender System

Marine Defender System provides anti virus, firewall, vulnerability protection, application control and secure remote access and other integrated endpoint protection functions.



IT Cabinet



01 AC Controller (ASI)

02 VSAT Antenna Adapter (ASI)

03 LEO Satellite Power Supply Unit (Starlink)

04 VSAT billing gateway (ASI)

05 Video Compression Module (ASI)

06 PDU (ASI)

07 UPS (HUAWEI)

08 NVR (ASI)

09 AI Intelligent Workstation (ASI)

10 CCTV Switch (ASI)

11 LAN Switch (ASI)

12 Switch Power Supply Unit (Weidmüller)

13 Terminal (Weidmüller)

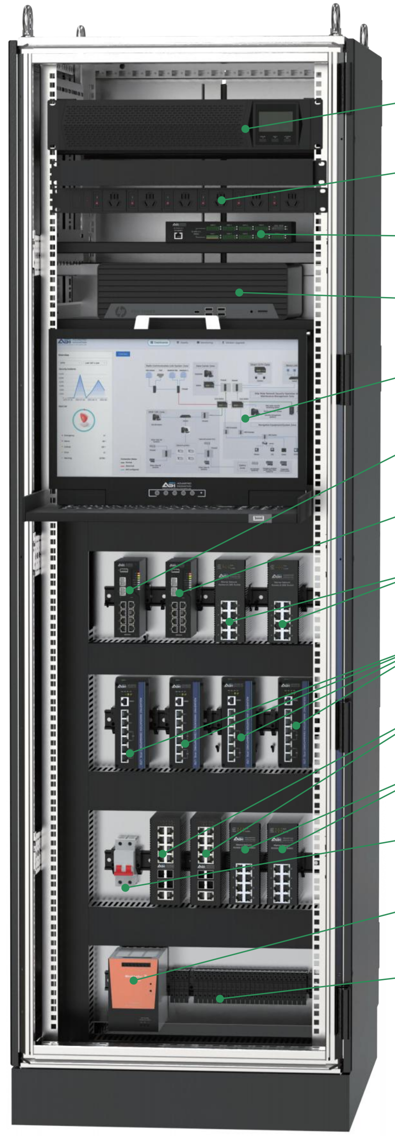
14 Micro Circuit Breaker (Schneider)

15 Firewall (ASI)

16 Waterproof PoE Extender (ASI)

Cabinet (Rittal)

Cybersecurity Cabinet



01 UPS (HUAWEI)

02 PDU (ASI)

03 460 SNGF (ASI)

04 Cybersecurity Management Platform (ASI)

05 KVM Control Platform (ASI)

06 SO-460-GW (ASI)

07 SO-460-FWD (ASI)

08 SO-460-SW (ASI)

09 Firewall (Integrated IDS) (ASI)

10 Core Switch (ASI)

11 Switch (ASI)

12 Micro Circuit Breaker (Schneider)

13 Switch Power Supply Unit (Weidmüller)

14 Terminal (Weidmüller)

Cabinet (Rittal)

3.1

YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

Cyber Resilience Ships (IACS UR E26)

Core Objectives

Enhancing Ship Cyber Resilience

E26 Systems integrator treating ships as integrated cyber entities to ensure the secure integration of IT (Information Technology) and OT (Operational Technology) equipment and system throughout their lifecycle. This comprehensive approach safeguards against cyber threats while minimizing risks to personnel, the environment, and vessel safety.

Design
Security-first architecture planning

Construction
Secure implementation practices

Commissioning
Validation and testing protocols

Operation
Continuous monitoring and updates

Establishing a Unified Regulatory Framework

E26 Systems integrator providing mandatory cybersecurity baseline requirements for the global maritime industry, promoting accountability among stakeholders in both technical and managerial aspects.

Shipowners
Ensuring vessels comply with E26 certification standards and maintaining cybersecurity throughout vessel operations.

Shipyards
Incorporating comprehensive cybersecurity solutions into vessel designs from the ground up.

CBS maker
Delivering equipment and systems that meet IEC 62443 standards or E27 specifications.

Key Standards Integration:

The framework holistically elevates the cybersecurity posture of ships through standardized compliance with international cybersecurity protocols and certifications.

Device Overview

Statistical time:June 1, 2025

Device Name	Function Product Introduction	Corresponding Specification Requirements											Certificate
		E26	E27	CCS	DNV	ABS	BV	RINA	KR	RS	LR	NK	
Class Notation (E26)		Rev.1	Rev.1	2024 CyberSecurity (P[SL0])	2024 Cyber Secure (Essential)	2024 CR	2024 Cyber Resilient	2024 Cyber Resilience	2024 Cyber Resilience	2024 Cyber Resilience	2024 Cyber Resilience	2024 Cyber Resilience	
Marine Defender System	A ship terminal protection software integrating white list protection, virus detection, patch management, security baseline inspection, access control and peripheral control.	4.2.3 4.2.7	SR1.2 SR2.3 SR2.4 SR3.2 SR3.3 SR7.7	4.3.14.1 4.3.14.2 4.3.18.1 4.3.18.2 4.3.18.3	5.3.3 5.3.5	13.3.3 13.3.7	3.2.6.2.2 3.2.6.3.1 3.2.6.4 3.2.6.5 3.2.6.5.3.-d 3.2.6.8.1	4.3.4 4.3.8	2.402.3 2.402.7	2.2.2.3 2.2.2.7	2.16.5.c 2.16.5.h	5.4.3(3) 5.4.3(7)	IEC 62443 4-2 Certificate
Marine Network Firewall	It integrates traditional packet filtering, VPN, application and identity recognition, anti-virus, intrusion prevention, behavior management, application layer content security protection and other comprehensive security defense functions.	4.2.1 4.2.2 4.2.4 4.4.3	SR1.2 SR2.3 SR2.4 SR3.2 SR3.3 SR7.7	4.3.6.1 4.3.6.2 4.3.7.2 4.3.8.1 4.3.8.2 4.3.10.1 4.3.13.2 4.3.14.3 4.3.15.2 4.3.15.3	3.2.1 3.2.2 4.6.3 4.6.4 5.3.4 5.4.8 5.4.9	13.3.1 13.3.2	3.2.6.2.1 3.2.6.3.3 3.2.6.5.1 3.2.8.4	4 3 2 4 3 3 4.3.7	2.402.1 2.402.2 2.404.3 2.402.4 2.402.6	2.2.2.1 2.2.2.2 2.2.2.5 2.2.4.3	2.1.6.5.b	5.4.3(1) 5.4.3(4) 5.4.3(6) 5.4.5(3)	CCS Type Approval Certificate, IEC62443 4-2 Certificate
Marine Network Core Switch	Core switch designed for marine vessels, enabling high-speed, stable data transmission and ensuring secure, reliable communication in harsh maritime environments.	4.2.1 4.2.5 4.4.2	SR 2.11	4.3.5.4 4.3.5.5 4.3.7.1 4.3.7.3 4.3.17.1 4.3.17.3 4.3.18.4 4.3.21.7									
Cybersecurity Management Platform	Used for unified management of ship network security Device, including auditing logs, analyzing event behavior, and configuring device parameters uniformly.	4.1.1 4.2.6 4.3.1	SR1.1	4.3.2.1 4.3.2.2 4.3.5.1 4.3.13.1 4.3.13.3 4.3.15.4 4.3.15.5 4.3.16.1 4.3.23.1	5.4.9 5.4.12	13.1.1 13.7.3 13.3.6	3.2.5.2 3.2.6.5.3.f 3.2.6.7.3 5.2.4.1.3.23 5.4.7.1.1 6.2.7.3	422 4.3.7	2.401.1 2.402.6 2.403.1	2.2.1.1 2.2.2.6 2.2.3.1	2.16.4 2.16.5.f 2.16.5.g 2.16.5.h 2.16.6	5.4.4(2)	IEC 62443 4-2 Certificate

From 《E26 Cyber Resilience of Ships》 Rev.1

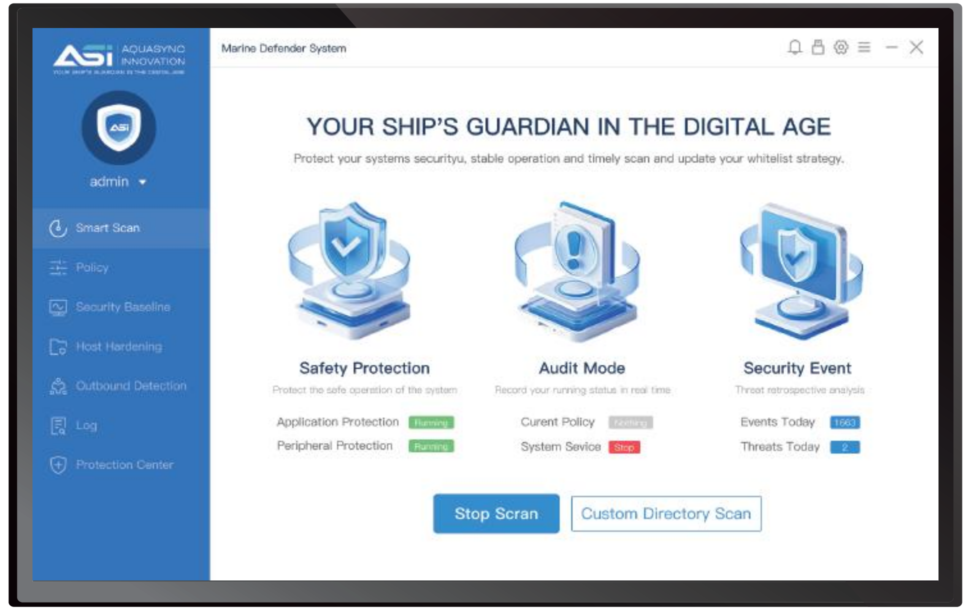
Document (E26)	Systems integrator			Shipowner			
	Design	Construction	Commissioning	Operation	1st AS	AS	SS
Approved Supplier Documentation [5]	Submit	Maintain	Maintain	Maintain			
Zones and Conduit Diagram [5.1.1]	Submit	Maintain	Maintain	Maintain			
Cybersecurity Design Description [5.1.2]	Submit	Maintain	Maintain	Maintain			
Vessel Asset Inventory [5.1.3]	Submit	Maintain	Maintain	Maintain			
Risk Assessment for the Exclusion of CBS [5.1.4] NOTE 1	Submit	Maintain	Maintain	Maintain			
Description of Compensating Countermeasures [5.1.5] NOTE 1	Submit	Maintain	Maintain	Maintain	Submit	Submit	Demonstrate
Ship Cyber Resilience Test Procedure [5.2.1]		Submit	Demonstrate	Maintain			
Ship Cybersecurity and Resilience Program [5.3.1] - Management of Change (Moc) [4.1.1.4.4] - Management of Software Updates [4.1.1.4.4] - Management of Firewalls [4.2.1.4.4] - Management of Malware Protection [4.2.3.4.4] - Management of Access Control [4.2.4.4.4] - Management of Confidential Information [4.2.4.4.4] - Management of Remote Access [4.2.6.4.4] - Management of Mobile and Portable Devices [4.2.7.4.4] - Detection of Security Anomalies [4.3.1.4.4] - Verification of Security Functions [4.3.2.4.4] - Incident Response Plans [4.4.1.4.4] - Recovery Plans [4.5.1.4.4]				Maintain	Submit	Demonstrate	

摘自《E26船舶网络弹性 》Rev.1

文档 (E26)	系统集成商			船东			
	设计	建造	测试	营运	1st AS	AS	SS
准的供应商文档 [5]	提交	保持更新	保持更新	保持更新			
区域及管道划分图 [5.1.1]	提交	保持更新	保持更新	保持更新			
网络安全设计说明 [5.1.2]	提交	保持更新	保持更新	保持更新			
船舶资产清单 [5.1.3]	提交	保持更新	保持更新	保持更新			
免除 CBS 的风险评估报告[5.1.4] NOTE 1	提交	保持更新	保持更新	保持更新			
补偿措施说明 [5.1.5] NOTE 1	提交	保持更新	保持更新	保持更新	提交	提交	证明
船舶网络韧性测试程序[5.2.1]		提交	证明	保持更新			
船舶网络安全和韧性计划[5.3.1] - 变更管理[4.1.1.4.4] - 软件更新[4.1.1.4.4] - 防火墙管理[4.2.1.4.4] - 恶意软件防护管理[4.2.3.4.4] - 访问控制管理[4.2.4.4.4] - 保密信息管理[4.2.4.4.4] - 远程访问管理[4.2.6.4.4] - 移动及便携式设备管理[4.2.7.4.4] - 安全异常检测[4.3.1.4.4] - 安全功能验证[4.3.2.4.4] - 事件响应计划[4.4.1.4.4] - 恢复计划[4.5.1.4.4]				保持更新	提交	证明	

Marine Defender System

IEC62443 4-1 4-2



Marine Defender System

admin

Smart Scan
Policy
Security Baseline
Host Hardening
Outbound Detection
Log
Protection Center

YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

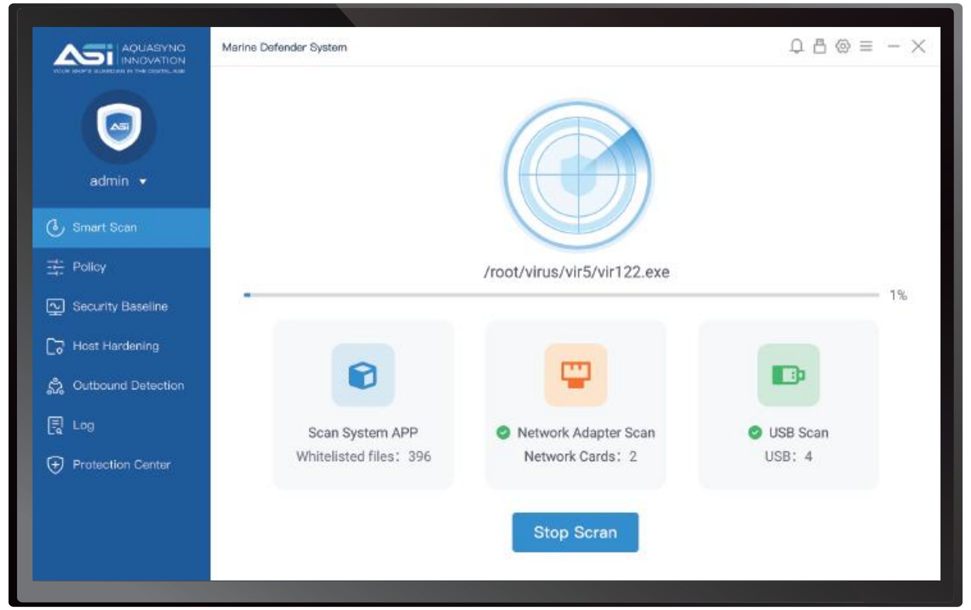
Protect your systems securityu, stable operation and timely scan and update your whitelist strategy.

Safety Protection
Protect the safe operation of the system
Application Protection Running
Peripheral Protection Running

Audit Mode
Record your running status in real time
Curent Policy Nothing
System Sevice Stop

Security Event
Threat retrospective analysis
Events Today 1663
Threats Today 2

Stop Scran
Custom Directory Scan



Marine Defender System

admin

Smart Scan
Policy
Security Baseline
Host Hardening
Outbound Detection
Log
Protection Center

/root/virus/vir5/vir122.exe

1%

Scan System APP
Whitelisted files：396

✓ Network Adapter Scan
Network Cards：2

✓ USB Scan
USB：4

Stop Scran

Product Introduction

Marine Defender System is a ship terminal protection software that integrates whitelist protection, virus killing, patch management, network whitelist protection, security baseline management, access control, and peripheral control. It can effectively prevent infections and exploitation by viruses, trojans, and zero-day vulnerabilities, ensuring the security of shipboard terminals such as engineering stations, operator stations, SCADA servers, database servers, and OPC servers in the maritime network environment.

Function Characteristics

Security Baseline

A series of security standards have been developed based on the basic security requirements of the system and the actual scenario of the ship, which can achieve universal and specific rules such as system configuration, marine Cybersecurity level requirements, account management, and log management to start and stop, and strengthen the security of ship terminals.

Network Whitelist

In response to the dynamic port characteristics of industrial control protocols, it supports network whitelist protection based on the "port+program" strategy, preventing network access outside of trusted ports or programs, and effectively resisting various network attacks.

Safety USB Flash Disk

Using high-strength password algorithms, secure USB drives can only be accessed by Marine Defender System, preventing Trojans, viruses, and other entities from entering the ship's network system from the source.

Blacklist

Conduct a deep scan of system files based on the blacklist, identify and kill malicious code, and isolate the identified risk items to ensure the security of the ship's terminal environment.

Whitelist Protection

Generate a whitelist file that is compatible with the current industrial host through three methods: scanning the disk, software installation tracking, and built-in whitelist library, allowing only the programs in the whitelist file to run.

Mandatory Access Control

Complies with ship terminal security reinforcement system standards, supports read and write access control for BLP and BIBA models, ensuring system confidentiality and integrity.

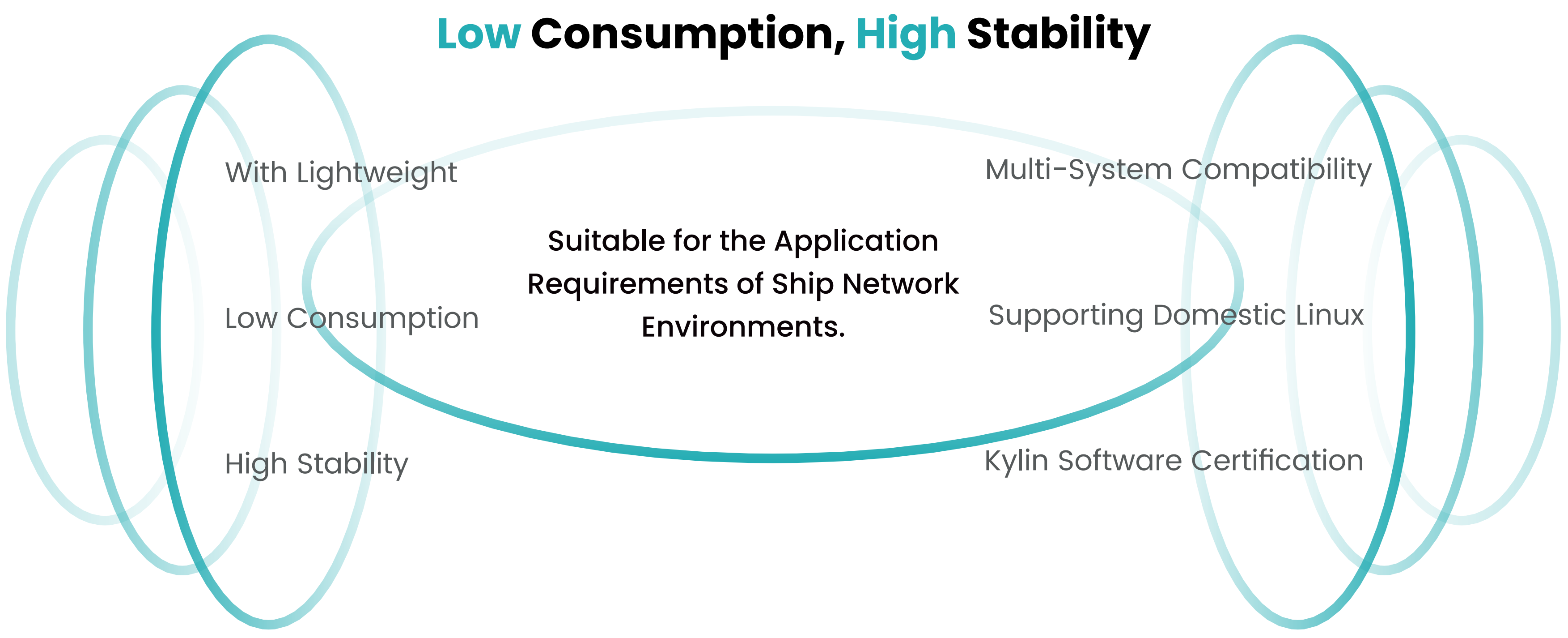
Peripheral Control

Support control over USB storage, network cards, floppy drives, and optical drives.

Operating Environment

Operating System Name	Operating System Type	Operating System Architecture
Windows	• WindowsXP SP2、SP3/Windows 2000/Windows7/Windows8、8.1/Windows10/Windows11 • WindowsServer 2003 SP2/WindowsServer 2008、2008R2/WindowsServer 2012/WindowsServer 2016/WindowsServer 2019 • Windows Embedded Standard 2009/Windows Embedded Standard 2010	32 bit/64 bit
Linux	• Redhat、Ubuntu、Centos、Fedora、Suse • Open Euler、UnionTech OS V20、NeoKylin V10、Kylin V10、Linx V6	X86/ARM 64
Unix	• AIX6.1、Solaris11.4	X86/ARM 64

Operation and Maintenance Characteristics



Low Consumption, High Stability

With Lightweight

Low Consumption

High Stability

Suitable for the Application Requirements of Ship Network Environments.

Multi-System Compatibility

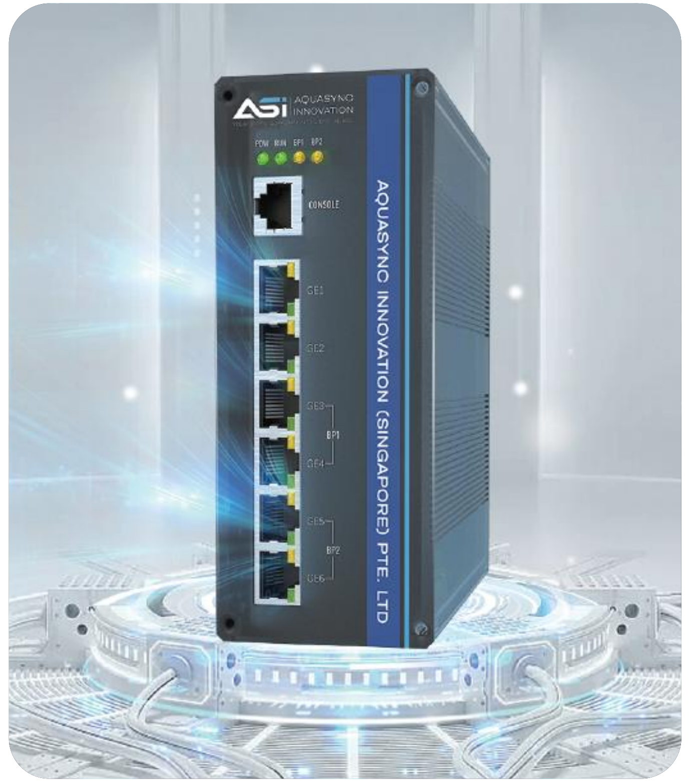
Supporting Domestic Linux

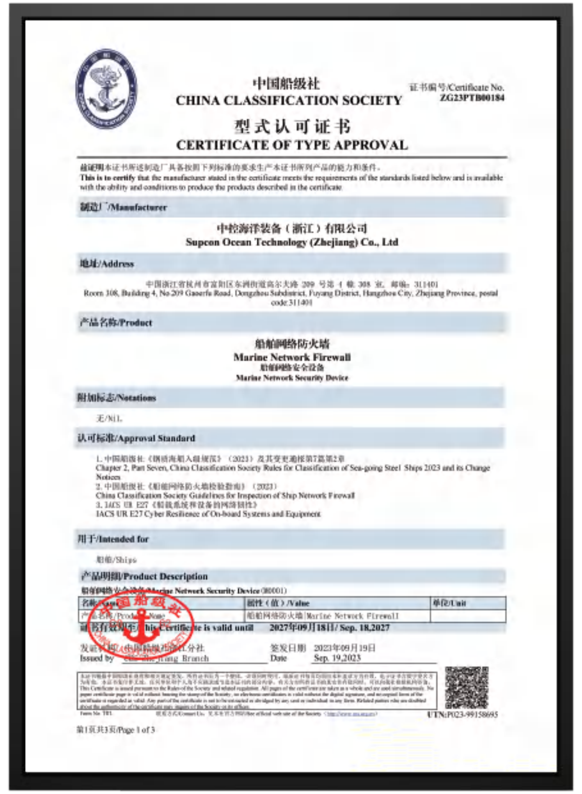
Kylin Software Certification

Marine Network Firewall

CCS Type Approval Certificate | IEC62443 4-1 4-2

SO-MFW-100M





中国船级社
CHINA CLASSIFICATION SOCIETY

证书编号/Certificate No.
ZG23PTB00184

型式认可证书
CERTIFICATE OF TYPE APPROVAL

兹证明本证书所述制造厂具备按照下列标准的要求生产本证书所列产品的能力和条件。
This is to certify that the manufacturer stated in the certificate meets the requirements of the standards listed below and is available with the ability and conditions to produce the products described in the certificate.

制造厂/Manufacturer

中控海洋装备（浙江）有限公司
Supcon Ocean Technology (Zhejiang) Co., Ltd

地址/Address

中国浙江省杭州市富阳区东洲街道高尔夫路 209 号第 4 幢 308 室，邮编：311401
Room 308, Building 4, No.209 Gaoerfu Road, Dongzhou Subdistrict, Fuyang District, Hangzhou City, Zhejiang Province, postal code:311401

产品名称/Product

船舶网络防火墙
Marine Network Firewall
船舶网络安全设备
Marine Network Security Device

附加标志/Notations

无/Nil.

认可标准/Approval Standard

1. 中国船级社《钢质海船入级规范》（2023）及其变更通报第7篇第2章
Chapter 2, Part Seven, China Classification Society Rules for Classification of Sea-going Steel Ships 2023 and its Change Notices
2. 中国船级社《船舶网络防火墙检验指南》（2023）
China Classification Society Guidelines for Inspection of Ship Network Firewall
3. IACS UR E27《船载系统和设备的网络韧性》
IACS UR E27 Cyber Resilience of On-board Systems and Equipment

用于/Intended for

船舶/Ships

产品明细/Product Description

船舶网络安全设备/Marine Network Security Device (00001)

名称/Name	属性（值）/Value	单位/Unit
产品名称/Product Name	船舶网络防火墙/Marine Network Firewall	

证书有效期至/This Certificate is valid until 2027年09月18日/ Sep. 18,2027

发证机构 中国船级社浙江分社 签发日期 2023年09月19日
Issued by CCS Zhejiang Branch Date Sep. 19,2023

中国船级社 CHINA CLASSIFICATION SOCIETY

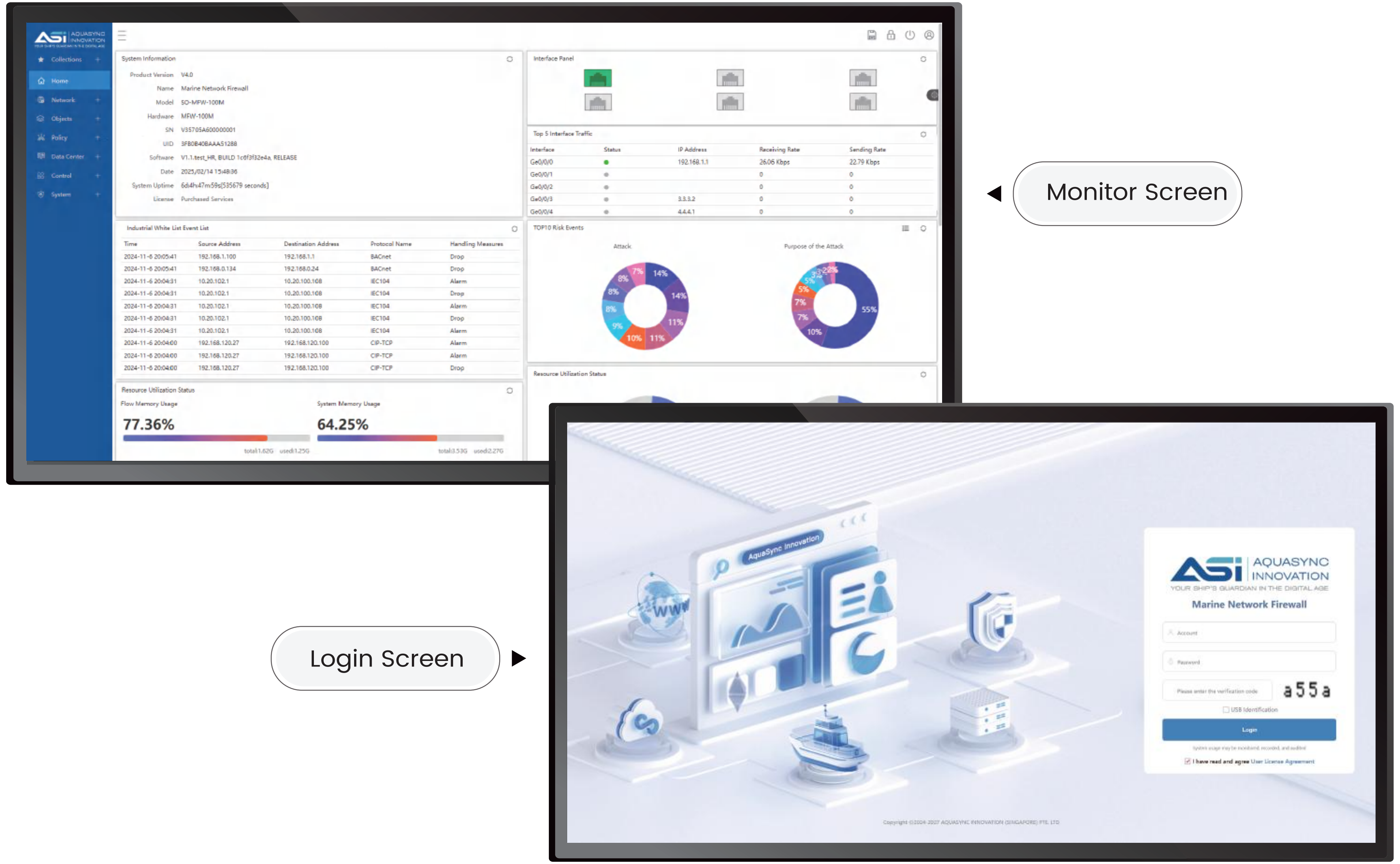
[illegible]

Form No. TB1 联系方式/Contact Us：见本社官方网站/See official web site of the Society（http://www.ccs.org.cn） UTN:P023-99158695

第1页共3页/Page 1 of 3

The Marine network firewall is specifically designed for boundary security in ship network environments, logical isolation between CBS systems, and internal security protection within CBS. The product adopts a deep defense and integrated engine mechanism with a quadruple whitelist, which not only meets the deep security requirements of industrial control security, but also meets the low latency requirements of industrial control security. On the hardware level, it has features such as fully enclosed, fanless, and redundant power supply, meeting the reliability and stability requirements in harsh marine environments, effectively ensuring the security of the ship's network both inside and outside.

Software



System Information

Product Version	V4.0
Name	Marine Network Firewall
Model	SO-MFW-100M
Hardware	MFW-100M
SN	V35705A600000001
UID	3FB0B40BAAA51288
Software	V1.1.test_HR, BUILD 1c6f3f32e4a, RELEASE
Date	2025/02/14 15:48:36
System Uptime	6d:4h:47m:59s[535679 seconds]
License	Purchased Services

Top 5 Interface Traffic

Interface	Status	IP Address	Receiving Rate	Sending Rate
Ge0/0/0	●	192.168.1.1	26.06 Kbps	22.79 Kbps
Ge0/0/1	●		0	0
Ge0/0/2	●		0	0
Ge0/0/3	●	3.3.3.2	0	0
Ge0/0/4	●	4.4.4.1	0	0

Industrial White List Event List

Time	Source Address	Destination Address	Protocol Name	Handling Measures
2024-11-6 20:05:41	192.168.1.100	192.168.1.1	BACnet	Drop
2024-11-6 20:05:41	192.168.0.134	192.168.0.24	BACnet	Drop
2024-11-6 20:04:31	10.20.102.1	10.20.100.108	IEC104	Alarm
2024-11-6 20:04:31	10.20.102.1	10.20.100.108	IEC104	Drop
2024-11-6 20:04:31	10.20.102.1	10.20.100.108	IEC104	Alarm
2024-11-6 20:04:31	10.20.102.1	10.20.100.108	IEC104	Drop
2024-11-6 20:04:31	10.20.102.1	10.20.100.108	IEC104	Alarm
2024-11-6 20:04:00	192.168.120.27	192.168.120.100	CIP-TCP	Alarm
2024-11-6 20:04:00	192.168.120.27	192.168.120.100	CIP-TCP	Alarm
2024-11-6 20:04:00	192.168.120.27	192.168.120.100	CIP-TCP	Drop

Resource Utilization Status

Flow Memory Usage 77.36% total:1.62G used:1.25G

System Memory Usage 64.25% total:3.53G used:2.27G

Resource Utilization Status

ASI AQUASYNC INNOVATION
YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE
Marine Network Firewall

Account

Password

Please enter the verification code a55a

□ USB Identification

Login

System usage may be monitored, recorded, and audited

☑ I have read and agree User License Agreement

Copyright ©2024-2027 AQUASYNC INNOVATION (SINGAPORE) PTE. LTD

Monitor Screen

Login Screen

Software Features

Management

Support HTTPS, SSH, SNMP and other Management Methods	Support Web Command Line Management (CII Management Interface Embedded In Web-UI)

Deployment Mode

Support Routing, Transparency, Switching, and Mixed Mode Access	Support Bypass Mode	Support Interface Trunk.

Routing Protocol

Supports Static Routing, Policy Routing, and Dynamic Routing	Dynamic Routing Supports RIP V1/V2/NG, OSPFV2/V3, BGP4/4+protocols	Supports Static and Dynamic Multicast Routing, While Dynamic Multicast Routing Supports PIM-SM (Sparse Mode)

High Reliability

High reliability deployment supporting routing mode and transparent mode, capable of working in active standby and active mode, with real-time synchronization of sessions, users, and configurations	Support Configuring Interface Weights	Support Link Detection

Software Features

Analysis and Control of Industrial Protocol

Supporting analysis and control of industrial protocols such as OPC, OPC UA, S7, S7 PLUS, MODBUS(TCP/UDP), Ethernet/IP, DNP3, MODBUS RTU(TCP/Serial port), IEC60870-5-104, HartIP, CIP, IEC61850-MMS, BACnet, FINS, RSSP-1, IEC61850-GOOSE, EtherCAT, IEC61850-SV, FANUC, Profinet IO, Profinet(DCP), Profinet(MRP), Profinet(PTCP), dandong huatong RTU, SUPCON PLC UCP.

Industrial Control Whitelist Log

A separate industrial control whitelist log can display whitelist violation alarm logs, including time, duration, action, source security domain, Destination security domain, source IP, source port, application, industrial control protocol, detailed information, and other related information.

Industrial Control Protocol Recognition

Supports recognition of 80 industrial protocol applications.

Industrial Control Protocol AV Antivirus

Supports IEC60870-5-104 and IEC61850-MMS industrial control protocol AV antivirus.

Industrial Control Protocol Whitelist

Supports multiple modes such as learning, alarm, and protection, and supports up to 25000 intelligent learning industrial control protocol whitelists.

Industrial Control Protocol Compliance and Anomaly Package Inspection

Support 10 types of industrial control protocol compliance and abnormal package inspection.

Software Features

Network Attack Protection

Support defense against DNS Flood and HTTP Flood attacks based on different security zones, and support multiple protective measures such as warning, blocking, first packet drop, redirection, and manual confirmation;

Support security zone based defense against abnormal packet attacks, including ping of death, teardrop, IP options, TCP exceptions, Smurf, Fragle, Land, Winnuke, DNS exceptions, IP sharding, etc.

Virus Protection

Supports virus detection and killing of HTTP/FTP/POP3/SMTP/IMAP/SMB protocols;

Support decompressing and killing compressed files up to 6 levels.

VPN

Support IPSec VPN function and establish gateway encryption tunnels based on three negotiation modes: main mode, aggressive mode, and national security.

Support SSL VPN, support the use of SSL VPN clients to establish SSL VPN encryption tunnels with firewalls.

Software Features

Operation Management

Supports dual system backup and automatic migration of configurations during system switching; can record historical configuration files at different time points;

Support upgrading system versions and feature libraries through web interface;

Support building private servers through TFTP or FTP protocols to achieve real-time updates of IPS feature libraries, application recognition libraries, and other databases;

Support built-in packet capture tools in the web interface, and can easily and flexibly specify packet capture filtering conditions through expressions.

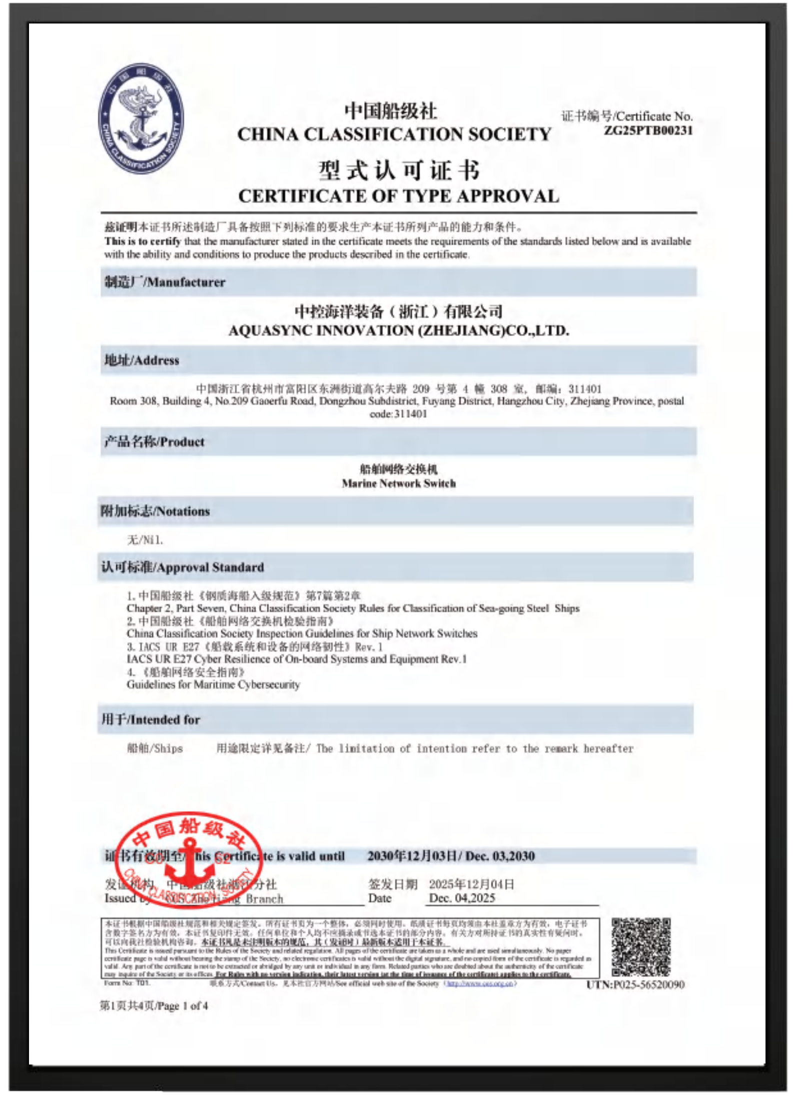
Intrusion Prevention

- Supports FTP, HTTP, IMAP, other vulnerability-based protection for APP, POP3, SMB, SMTP and other application protocols;
- Support vulnerability protection function, and classify the vulnerability protection feature library into at least six categories, including buffer overflow, cross site scripting, denial of service, malicious scanning, SQL injection, web attacks, etc;
- Vulnerability protection supports execution actions such as logging, blocking, releasing, and resetting, and can batch set execution actions for a certain category or all attack signatures.

Marine Network Core Switch

Product Introduction

The Marine Network Core Switch is a Layer 3 10-gigabit industrial Ethernet switch strictly designed to meet the requirements of industrial communication systems. It features 8 auto-adaptive 10/100/1000M Ethernet ports (with optional PoE power supply) and 4 10-gigabit SFP+ expansion slots (configurable with gigabit SFP modules). The Marine Network Core Switch offers a wide range of functions, including support for the MR-ring protocol, compatibility with STP/RSTP/MSTP, port-based VLAN, 802.1Q-based VLAN, QoS, IGMP Snooping, broadcast storm suppression, port aggregation, port mirroring, and port status management. In terms of power design, the product provides dual power inputs for redundant backup. The device complies with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab, and IEEE 802.3x standards. The Marine Network Core Switch supports Layer 3 routing, multicast routing, IPv6, and other functions, as well as multiple management methods such as Console, Telnet, and Web, delivering high-performance and highly reliable solutions for industrial communication. It is currently widely used in backbone communication systems across industries such as rail transit, intelligent transportation, urban utility tunnels, power, energy and wind power, and coal mining.



中国船级社
CHINA CLASSIFICATION SOCIETY

证书编号/Certificate No.
ZG25PTB00231

型 式 认 可 证 书
CERTIFICATE OF TYPE APPROVAL

兹证明本证书所述制造厂具备按照下列标准的要求生产本证书所列产品的能力和条件。
This is to certify that the manufacturer stated in the certificate meets the requirements of the standards listed below and is available with the ability and conditions to produce the products described in the certificate.

制造厂/Manufacturer

中控海洋装备（浙江）有限公司
AQUASYNC INNOVATION (ZHEJIANG)CO.,LTD.

地址/Address

中国浙江省杭州市富阳区东洲街道高尔夫路 209 号第 4 幢 308 室，邮编：311401
Room 308, Building 4, No.209 Gaoerfu Road, Dongzhou Subdistrict, Fuyang District, Hangzhou City, Zhejiang Province, postal code:311401

产品名称/Product

船舶网络交换机
Marine Network Switch

附加标志/Notations

无/Nil.

认可标准/Approval Standard

1. 中国船级社《钢质海船入级规范》第7篇第2章
Chapter 2, Part Seven, China Classification Society Rules for Classification of Sea-going Steel Ships
2. 中国船级社《船舶网络交换机检验指南》
China Classification Society Inspection Guidelines for Ship Network Switches
3. IACS UR E27《船载系统和设备的网络韧性》Rev. 1
IACS UR E27 Cyber Resilience of On-board Systems and Equipment Rev.1
4. 《船舶网络安全指南》
Guidelines for Maritime Cybersecurity

用于/Intended for

船舶/Ships　　用途限定详见备注/ The limitation of intention refer to the remark hereafter

中国船级社 CHINA CLASSIFICATION SOCIETY

证书有效期至/This Certificate is valid until　　2030年12月03日/ Dec. 03,2030

发证机构　中国船级社浙江分社
Issued by　CCS Zhejiang Branch

签发日期　2025年12月04日
Date　Dec. 04,2025

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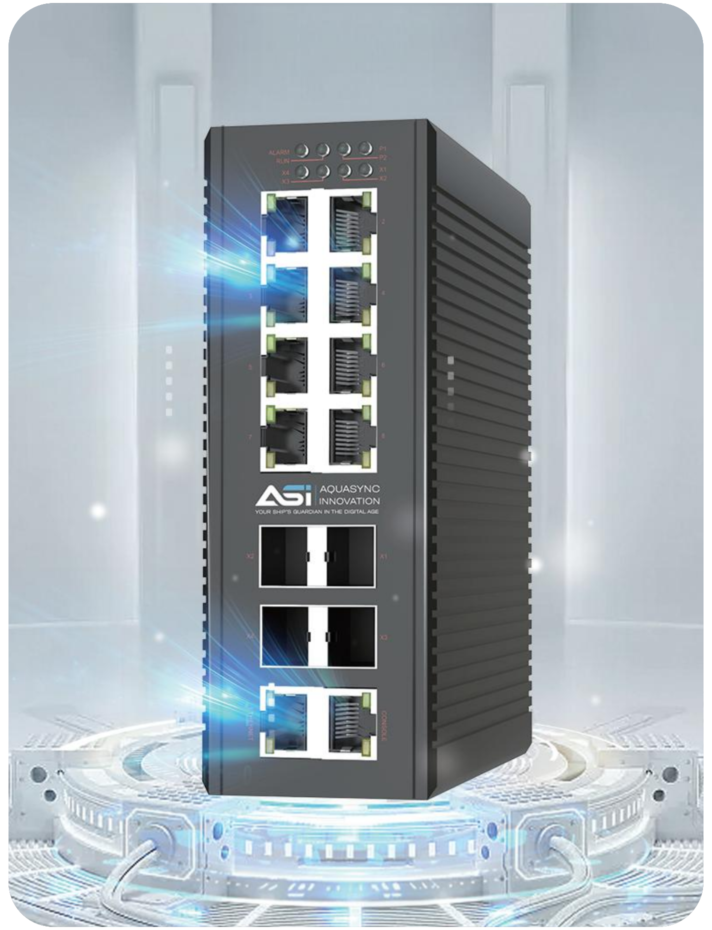
Form No: T01.　联系方式/Contact Us：见本社官方网站/See official web site of the Society（http://www.ccs.org.cn）

UTN:P025-56520090

第1页共4页/Page 1 of 4

Product characteristics



S0-SW3412

01 Layer 3 routing enables inter-VLAN communication

02 Modular flexibility with 4-port expansion options

03 High-density connectivity:Up to 8× Gigabit Ethernet ports/SFP slots，4× embedded 10G Ethernet ports

04 Tool-less modular design for hot-swappable upgrades

05 Ultra-compact form factor with multiple mounting options

06 Passive backplane minimizes maintenance requirements

07 Rugged die-cast housing for harsh environments

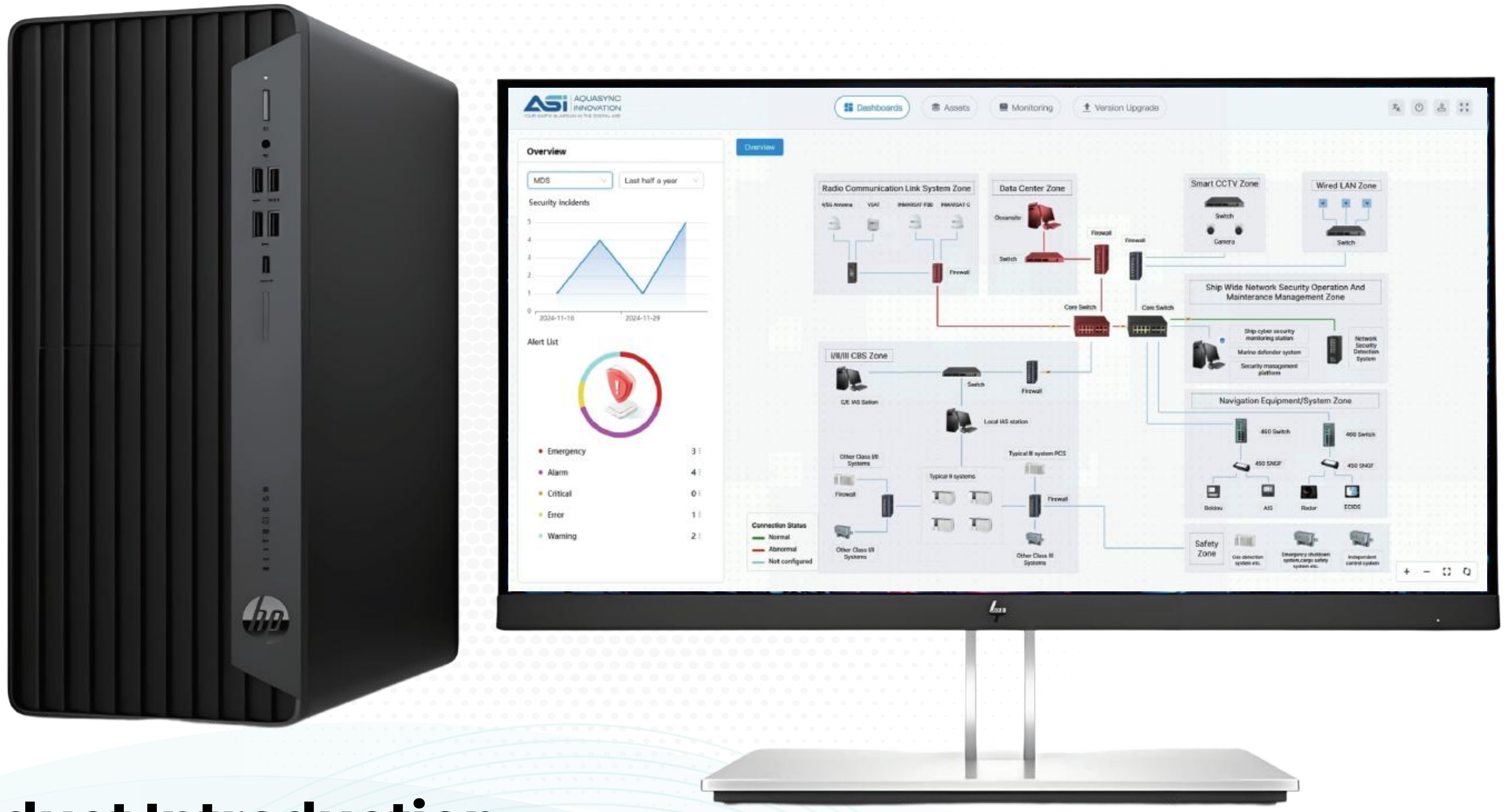
08 HTML5-based web UI delivers cross-platform management

Product Specifications

Model	S0-SW3412
Interfaces	
Number of copper ports	8 auto-adaptive 10/100/1000M Ethernet ports
Number of expansion slots	Expansion Interfaces 4 × 10G SFP+ slots (1G SFP compatible)
Exchange characteristics	
Backplane Bandwidth	128Gbps
Packet cache area	12Mbit
MAC Address Table	Supports 16K MAC addresses Support 1K multicast groups
Software Characteristics	
Traffic Control	Supports IEEE 802.3x flow control (full-duplex) Supports port-based flow control
Storm Suppression	Supports broadcast, multicast, and unknown unicast rate suppression Supports PPS/Mbps-based storm suppression
VLAN	Supports 4096 VLANs, port-based VLAN, MAC-based VLAN, IP-based VLAN, 802.1Q VLAN, GVRP
ACL	Supports L2-L4 packet filtering with classification based on: • Source/destination MAC address • Source/destination IPv4 address • TCP/UDP port numbers Supports 2K ACL entries
Port Aggregation	Supports manual aggregation Supports LACP static/dynamic aggregation
Ring Network Protocols	Supports MR-Ring (self-healing time <20ms), Supports STP/RSTP/MSTP Supports ERPS v1/v2, Supports MRP, Supports MRPP
Multicast	Supports IGMP Snooping v1/v2, Supports IGMP, Supports GMRP, Supports PIM-SM/DM
IP Routing	Static routing, RIP v1/v2, OSPF v1/v2, BGP4, IS-IS, Support routing strategies
Device Diagnostics	Supports port mirroring (1:1/N:1) Supports Ping and Tracert
Network Security	Supports hierarchical user management and password protection Supports 802.1X authentication Supports RADIUS authentication Supports AAA authentication Supports SSH Supports port isolation Supports dynamic ARP inspection Supports IP/Port/MAC binding Supports CPU protection/DDOS attack preventio

Cybersecurity Management Platform

IEC62443 4-1 4-2



Product Introduction

The cybersecurity management platform helps shipping build a comprehensive security protection system by centrally monitoring and managing device assets, security device, and security events in the network.

Real Time Monitoring

Asset Management:

Cybersecurity management platform has conducted different dimensions of statistics on the amount of security device currently managed.

Real Time Status:

Cybersecurity management platform monitors the status of the currently managed security device in real time, which can help crew visually present the real-time status of various assets under control in the current network.

Security Incidents:

Cybersecurity management platform displays real-time risk logs of boundary protection and ship terminal protection equipment, supporting historical data tracing.

Topology Visualization

- Professional Marine Control Network Topology Construction.
- Diversified Management Modes.
- Professional Marine Control Network Management Tools.
- Crew Can Customize and Edit The Topology.
- A Sample Graph Library of Various Asset Equipment.
- View and Manage Abnormal Devices in Real Time.
- Provide Reference for Asset Expansion.

Audit & Traceability

Log Auditing

Comprehensively record the logs of monitoring terminal devices in the ship cyber and syslog logs of other discovered devices in the network, facilitating security event analysis and investigation and evidence collection. Support log correlation analysis, which can achieve comprehensive analysis of events and assets.

Remote Operation and Maintenance

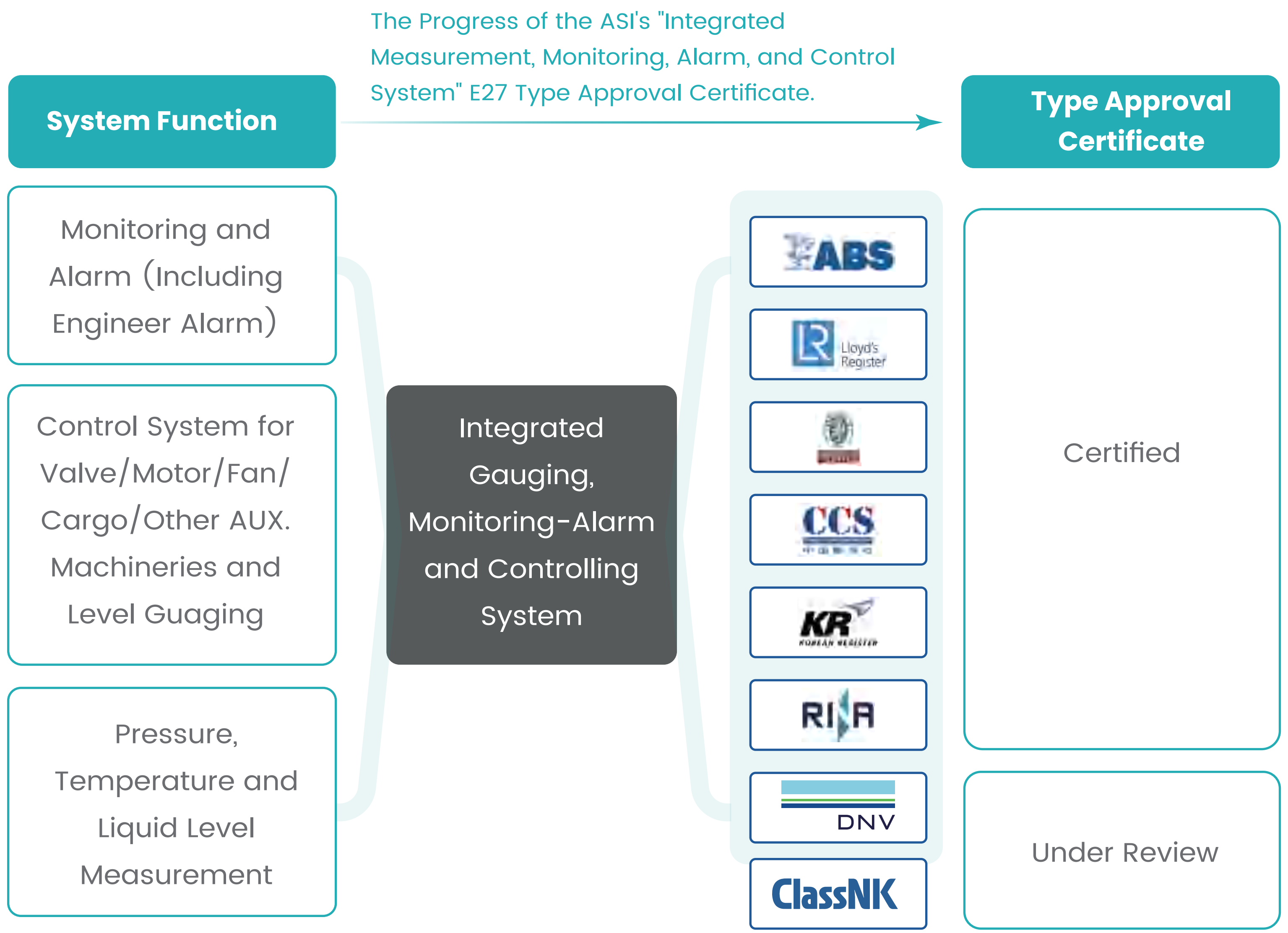
The cybersecurity management platform provides you with a convenient way to remotely connect to various security devices without physical contact. Through encrypted connections, you can easily make configuration changes, view operation records, and perform other remote operation and maintenance operations without being physically present.

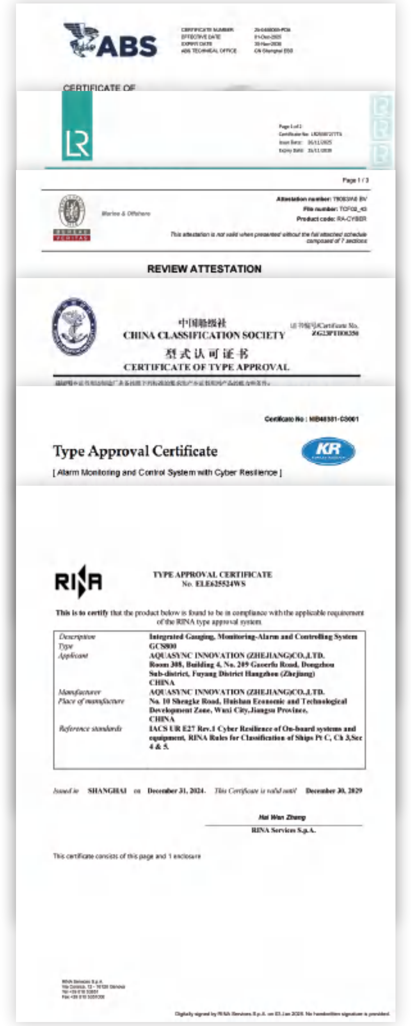
3.2

YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

Cyber resilience of On-Board Systems and Equipment (IACS UR E27)

IACS UR E27


System Function
The Progress of the ASI's "Integrated Measurement, Monitoring, Alarm, and Control System" E27 Type Approval Certificate.
Type Approval Certificate
Monitoring and Alarm (Including Engineer Alarm)
Control System for Valve/Motor/Fan/Cargo/Other AUX. Machineries and Level Guaging
Pressure, Temperature and Liquid Level Measurement
Integrated Gauging, Monitoring-Alarm and Controlling System
ABS
Lloyd's Register
CCS
KR
RINA
DNV
ClassNK
Certified
Under Review


ABS

CERTIFICATE NUMBER
EFFECTIVE DATE
EXPIRY DATE
ABS TECHNICAL OFFICE

CERTIFICATE OF

LR

Page 1 of 2
Certificate No:
Issue Date:
Expiry Date:

Page 1 / 3

Marine & Offshore

Attestation number: [illegible]
File number: TCF02_43
Product code: RA-CYBER

This attestation is not valid when presented without the full attached schedule composed of 7 sections

REVIEW ATTESTATION

中国船级社
CHINA CLASSIFICATION SOCIETY
型式认可证书
CERTIFICATE OF TYPE APPROVAL

证书编号/Certificate No.
[illegible]

Certificate No : [illegible]

Type Approval Certificate

[Alarm Monitoring and Control System with Cyber Resilience]

KR

RINA

TYPE APPROVAL CERTIFICATE
No. ELE625524WS

This is to certify that the product below is found to be in compliance with the applicable requirement of the RINA type approval system

Description	**Intergrated Gauging, Monitoring-Alarm and Controlling System**
Type	**GCS800**
Applicant	**AQUASYNC INNOVATION (ZHEJIANG)CO.,LTD.** **Room 308, Building 4, No. 209 Gaoerfu Road, Dongzhou Sub-district, Fuyang District Hangzhou (Zhejiang)** **CHINA**
Manufacturer *Place of manufacture*	**AQUASYNC INNOVATION (ZHEJIANG)CO.,LTD.** **No. 10 Shengke Road, Huishan Economic and Technological Development Zone, Wuxi City,Jiangsu Province,** **CHINA**
Reference standards	**IACS UR E27 Rev.1 Cyber Resilience of On-board systems and equipment, RINA Rules for Classification of Ships Pt C, Ch 3,Sec 4 & 5.**

Issued in **SHANGHAI** *on* **December 31, 2024.** *This Certificate is valid until* **December 30, 2029**

Hai Wen Zhang
RINA Services S.p.A.

This certificate consists of this page and 1 enclosure

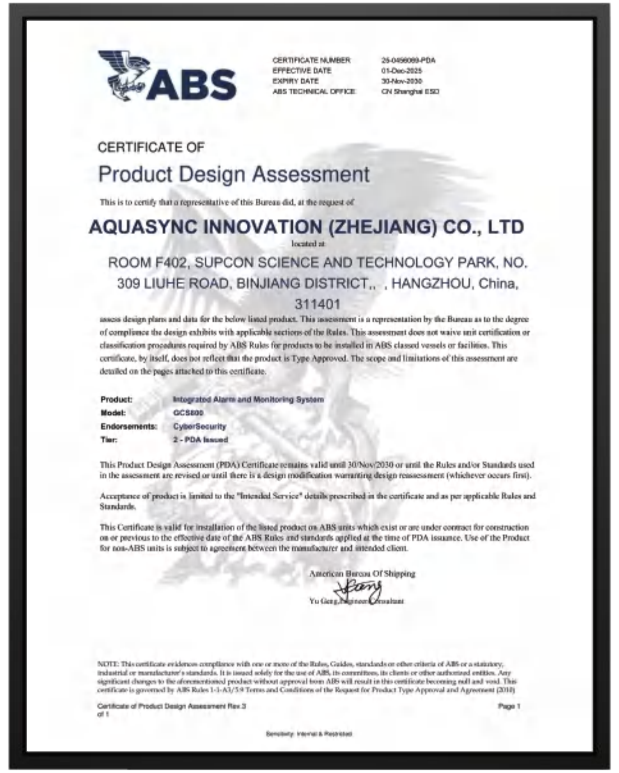
RINA Services S.p.A.
Via Corsica, 12 - 16128 Genova
Tel +39 010 53851
Fax +39 010 5351000

Digitally signed by RINA Services S.p.A. on 03 Jan 2025. No handwritten signature is provided.

Integrated Gauging, Monitoring-Alarm and Controlling System

ABS Certificate of Product Design Assessment GCS800 (Endorsements: CyberSecurity)

ABS
船舶网络安全E27综合测量监测报警和控制系统型式认可证书 颁证仪式
Award Ceremony for Type Approval Certificate of E27 Integrated Measurement, Monitoring, Alarm and Control System for Ship Cybersecurity
Integrated Gauging, Monitoring-alarm and Controlling System
Monitoring and Alarm(including Engineer Alarm)
Control System for Valve/Motor/Fan/Cargo/Other aux. machinery and Level Gauging
2025



ABS

CERTIFICATE NUMBER 25-0456069-PDA
EFFECTIVE DATE 01-Dec-2025
EXPIRY DATE 30-Nov-2030
ABS TECHNICAL OFFICE CN Shanghai ESD

CERTIFICATE OF
Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

AQUASYNC INNOVATION (ZHEJIANG) CO., LTD

located at

ROOM F402, SUPCON SCIENCE AND TECHNOLOGY PARK, NO. 309 LIUHE ROAD, BINJIANG DISTRICT,, , HANGZHOU, China, 311401

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product:	Integrated Alarm and Monitoring System
Model:	GCS800
Endorsements:	CyberSecurity
Tier:	2 - PDA Issued

This Product Design Assessment (PDA) Certificate remains valid until 30/Nov/2030 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping
Yu Geng, Engineer Consultant

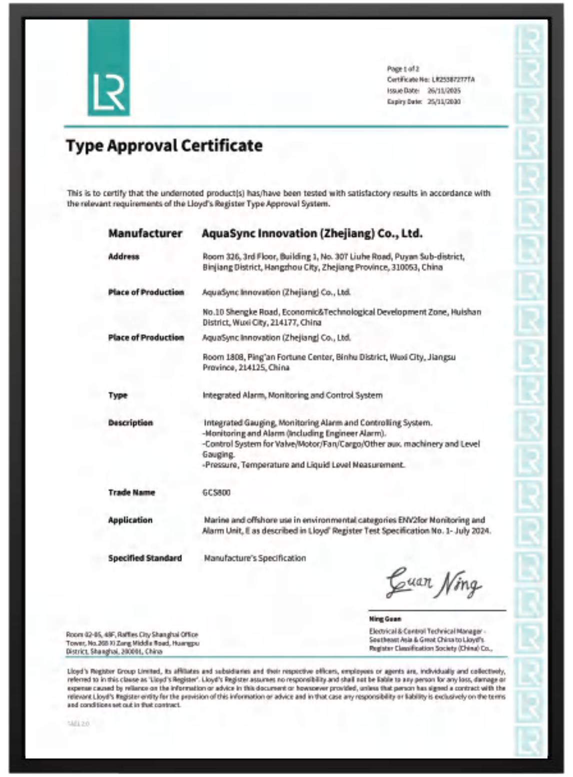
NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2018)

Certificate of Product Design Assessment Rev.3 of 1 Page 1

Sensitivity: Internal & Restricted

Integrated Gauging, Monitoring-Alarm and Controlling System

LR Type Approval Certificate GCS800



LR

Page 1 of 2
Certificate No: LR25387277TA
Issue Date: 26/11/2025
Expiry Date: 25/11/2030

Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

Manufacturer	AquaSync Innovation (Zhejiang) Co., Ltd.
Address	Room 326, 3rd Floor, Building 1, No. 307 Liuhe Road, Puyan Sub-district, Binjiang District, Hangzhou City, Zhejiang Province, 310053, China
Place of Production	AquaSync Innovation (Zhejiang) Co., Ltd. No.10 Shengke Road, Economic&Technological Development Zone, Huishan District, Wuxi City, 214177, China
Place of Production	AquaSync Innovation (Zhejiang) Co., Ltd. Room 1808, Ping'an Fortune Center, Binhu District, Wuxi City, Jiangsu Province, 214125, China
Type	Integrated Alarm, Monitoring and Control System
Description	Integrated Gauging, Monitoring Alarm and Controlling System. -Monitoring and Alarm (including Engineer Alarm). -Control System for Valve/Motor/Fan/Cargo/Other aux. machinery and Level Gauging. -Pressure, Temperature and Liquid Level Measurement.
Trade Name	GCS800
Application	Marine and offshore use in environmental categories ENV2for Monitoring and Alarm Unit, E as described in Lloyd' Register Test Specification No. 1- July 2024.
Specified Standard	Manufacture's Specification

Guan Ning

Ning Guan
Electrical & Control Technical Manager - Southeast Asia & Great China to Lloyd's Register Classification Society (China) Co.,

Room 02-05, 48F, Raffles City Shanghai Office Tower, No.268 Xi Zang Middle Road, Huangpu District, Shanghai, 200001, China

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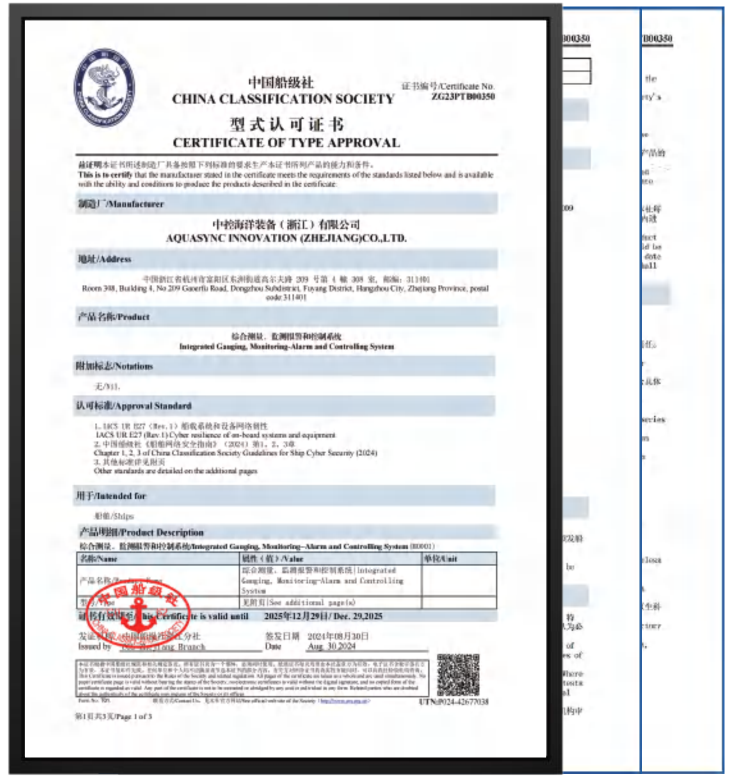
TA01 2.0

Integrated Gauging, Monitoring-Alarm and Controlling System

CCS Certificate of Type Approval (Meet Cybersecurity Level SL2)

Integrated Gauging, Monitoring-Alarm and Controlling System includes AMS, VRCS & LGS and CMS, wwhich has obtained the world's first type approval certificate with cybersecurity （cybersecurity SL2 level）issued by CCS and supports real-time communication between ship and shore.

CCS
CHINA CLASSIFICATION SOCIETY
中 国 船 级 社
INTEGRATED GAUGING, MONITORING-ALARM AND CONTROLLING SYSTEM
& SIMULATION
TECH VILLAGE



中国船级社
CHINA CLASSIFICATION SOCIETY

证书编号/Certificate No.
ZG23PTB00350

型式认可证书
CERTIFICATE OF TYPE APPROVAL

兹证明本证书所述制造厂具备按照下列标准的要求生产本证书所列产品的能力和条件。
This is to certify that the manufacturer stated in the certificate meets the requirements of the standards listed below and is available with the ability and conditions to produce the products described in the certificate.

制造厂/Manufacturer

中控海洋装备（浙江）有限公司
AQUASYNC INNOVATION (ZHEJIANG)CO.,LTD.

地址/Address

中国浙江省杭州市富阳区东洲街道高尔夫路 209 号第 4 幢 308 室，邮编：311401
Room 308, Building 4, No 209 Gaoerfu Road, Dongzhou Subdistrict, Fuyang District, Hangzhou City, Zhejiang Province, postal code 311401

产品名称/Product

综合测量、监测报警和控制系统
Integrated Gauging, Monitoring-Alarm and Controlling System

附加标志/Notations

无/Nil.

认可标准/Approval Standard

1. IACS UR E27（Rev.1）船载系统和设备网络韧性
IACS UR E27 (Rev.1) Cyber resilience of on-board systems and equipment
2. 中国船级社《船舶网络安全指南》（2024）第1、2、3章
Chapter 1, 2, 3 of China Classification Society Guidelines for Ship Cyber Security (2024)
3. 其他标准详见附页
Other standards are detailed on the additional pages

用于/Intended for

船舶/Ships

产品明细/Product Description

综合测量、监测报警和控制系统/Integrated Gauging, Monitoring-Alarm and Controlling System (B0001)

名称/Name	属性（值）/Value	单位/Unit
产品名称/Product Name	综合测量、监测报警和控制系统|Integrated Gauging, Monitoring-Alarm and Controlling System	
型号/Type	见附页|See additional page(s)	

证书有效期至/This Certificate is valid until 2025年12月29日/ Dec. 29,2025

发证机构 中国船级社浙江分社
Issued by CCS Zhejiang Branch

签发日期 2024年08月30日
Date Aug. 30,2024

中国船级社 CHINA CLASSIFICATION SOCIETY

[illegible]

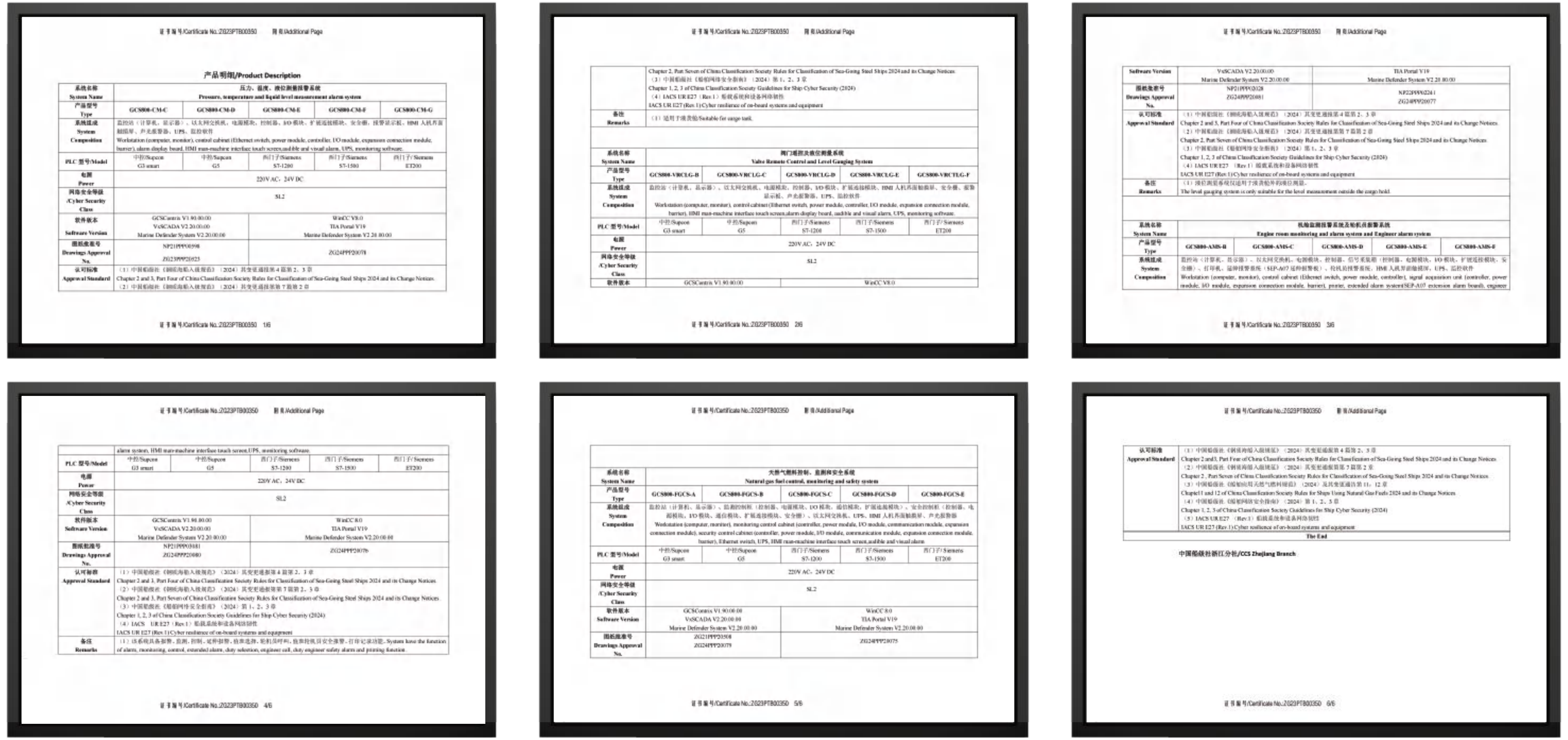
Form No. TJ21 联系方式/Contact Us 见本社官方网站/See official website of the Society（http://www.ccs.org.cn）

UTN:2024-42677038

第1页 共3页/Page 1 of 3

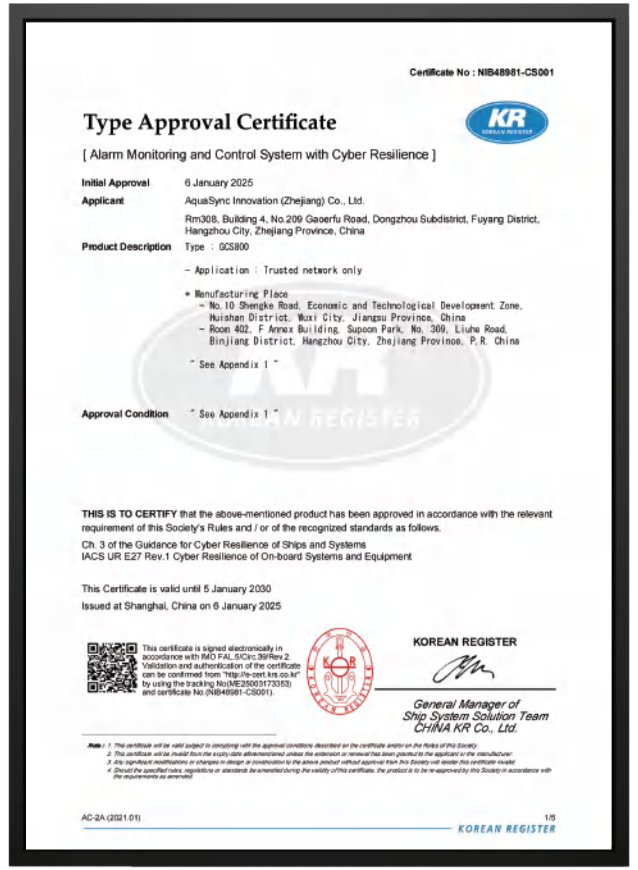
Certificate Annex

- Pressure, Temperature and Liquid Level Measurement Alarm System
- Valve Remote Control and Level Gauging System
- Engine Room Monitoring and Alarm System and Engineer Alarm System
- Natural Gas Fuel Control, Monitoring and Safety System
- Energy Management System



Integrated Gauging, Monitoring-Alarm and Controlling System

KR Certificate of Type Approval (Meet UR E27 Cybersecurity)



Certificate No : NIB48981-CS001

Type Approval Certificate

[Alarm Monitoring and Control System with Cyber Resilience]

Initial Approval	6 January 2025
Applicant	AquaSync Innovation (Zhejiang) Co., Ltd. Rm308, Building 4, No.209 Gaoerfu Road, Dongzhou Subdistrict, Fuyang District, Hangzhou City, Zhejiang Province, China
Product Description	Type : GCS800 - Application : Trusted network only * Manufacturing Place - No. 10 Shengke Road, Economic and Technological Development Zone, Huishan District, Wuxi City, Jiangsu Province, China - Room 402, F Annex Building, Supoon Park, No. 309, Liuhe Road, Binjiang District, Hangzhou City, Zhejiang Province, P.R. China " See Appendix 1 "
Approval Condition	" See Appendix 1 "

THIS IS TO CERTIFY that the above-mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows.

Ch. 3 of the Guidance for Cyber Resilience of Ships and Systems
IACS UR E27 Rev.1 Cyber Resilience of On-board Systems and Equipment

This Certificate is valid until 5 January 2030

Issued at Shanghai, China on 6 January 2025

This certificate is signed electronically in accordance with IMO FAL.5/Circ.39/Rev.2. Validation and authentication of the certificate can be confirmed from "http://e-cert.krs.co.kr" by using the tracking No(ME25003173353) and certificate No.(NIB48981-CS001).

KOREAN REGISTER

General Manager of
Ship System Solution Team
CHINA KR Co., Ltd.

Note : 1. This certificate will be valid subject to complying with the approval conditions described on the certificate and/or on the Rules of this Society.
2. This certificate will be invalid from the expiry date aforementioned unless the extension or renewal has been granted to the applicant or the manufacturer.
3. Any significant modifications or changes in design or construction to the above product without approval from this Society will render this certificate invalid.
4. Should the specified rules, regulations or standards be amended during the validity of this certificate, the product is to be re-approved by this Society in accordance with the requirements as amended.

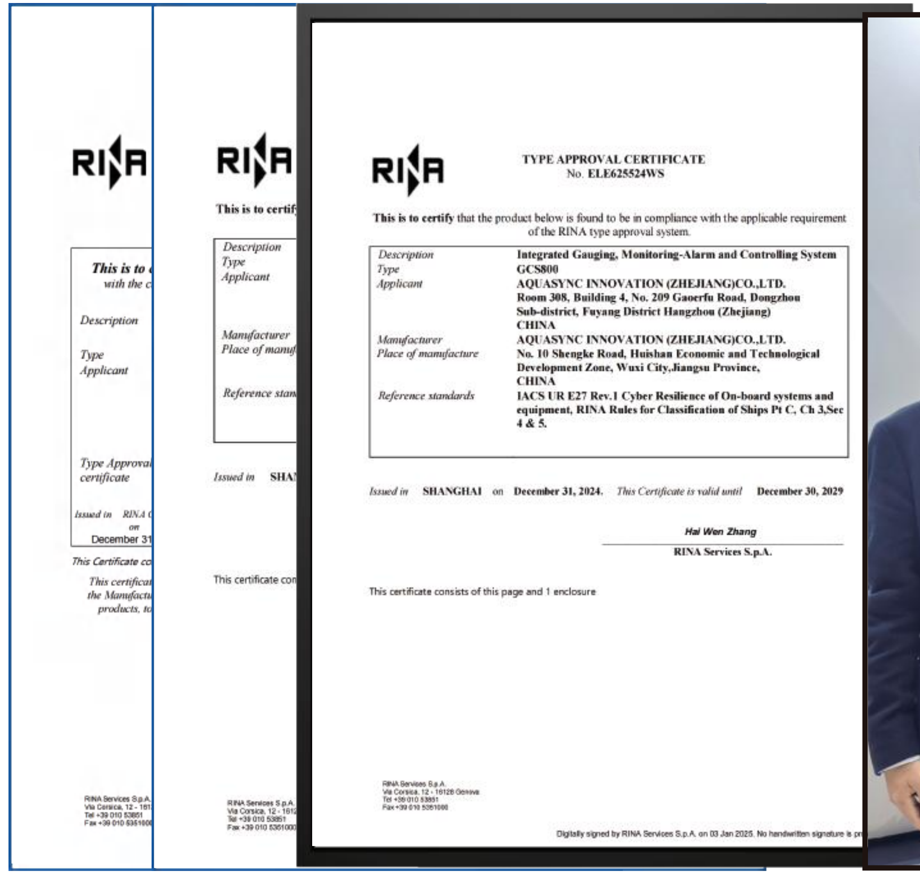
AC-2A (2021.01) 1/5

KOREAN REGISTER

RINA Certificate of Type Approval

RINA Certificate of Type Approval (Meet UR Rules for the Classification of Ship)

RINA Certificate of Type Approval (Meet UR IACS UR E27 Rev.1 Cyber Resilience of On-board systems and equipment)



RINA

TYPE APPROVAL CERTIFICATE
No. ELE625524WS

This is to certify that the product below is found to be in compliance with the applicable requirement of the RINA type approval system.

Description	**Integrated Gauging, Monitoring-Alarm and Controlling System**
Type	**GCS800**
Applicant	**AQUASYNC INNOVATION (ZHEJIANG)CO.,LTD. Room 308, Building 4, No. 209 Gaoerfu Road, Dongzhou Sub-district, Fuyang District Hangzhou (Zhejiang) CHINA**
Manufacturer	**AQUASYNC INNOVATION (ZHEJIANG)CO.,LTD.**
Place of manufacture	**No. 10 Shengke Road, Huishan Economic and Technological Development Zone, Wuxi City,Jiangsu Province, CHINA**
Reference standards	**IACS UR E27 Rev.1 Cyber Resilience of On-board systems and equipment, RINA Rules for Classification of Ships Pt C, Ch 3,Sec 4 & 5.**

Issued in **SHANGHAI** on **December 31, 2024.** *This Certificate is valid until* **December 30, 2029**

Hai Wen Zhang

RINA Services S.p.A.

This certificate consists of this page and 1 enclosure

RINA Services S.p.A.
Via Corsica, 12 - 16128 Genova
Tel +39 010 53851
Fax +39 010 5351000

Digitally signed by RINA Services S.p.A. on 03 Jan 2025. No handwritten signature is pr

Interpretation of CBS Cybersecurity Requirements

The "Guidelines on Ship Cybersecurity" 2024, Chapter 2 and Chapter 3, respectively, elaborate on CBS Cybersecurity requirements, levels, and the requirements for CBS inspection/evaluation. The Cybersecurity requirements for CBS are developed from the following 7 aspects:

Identification and Authentication

Identify and authenticate all users (personnel, software processes, and devices) before granting access to the system.

Usage Control

Assign permissions to identified and authenticated users (personnel, software processes, or devices) to perform authorized operations requested by the system, and monitor the use of permissions.

System Integrity

Ensure the integrity of the system to prevent unauthorized operations.

Data Confidentiality

Ensure the confidentiality of data in communication channels and storage areas to prevent unauthorized disclosure.

Restricted Data Flow

Segment the system into zones and conduits to limit unnecessary data flow.

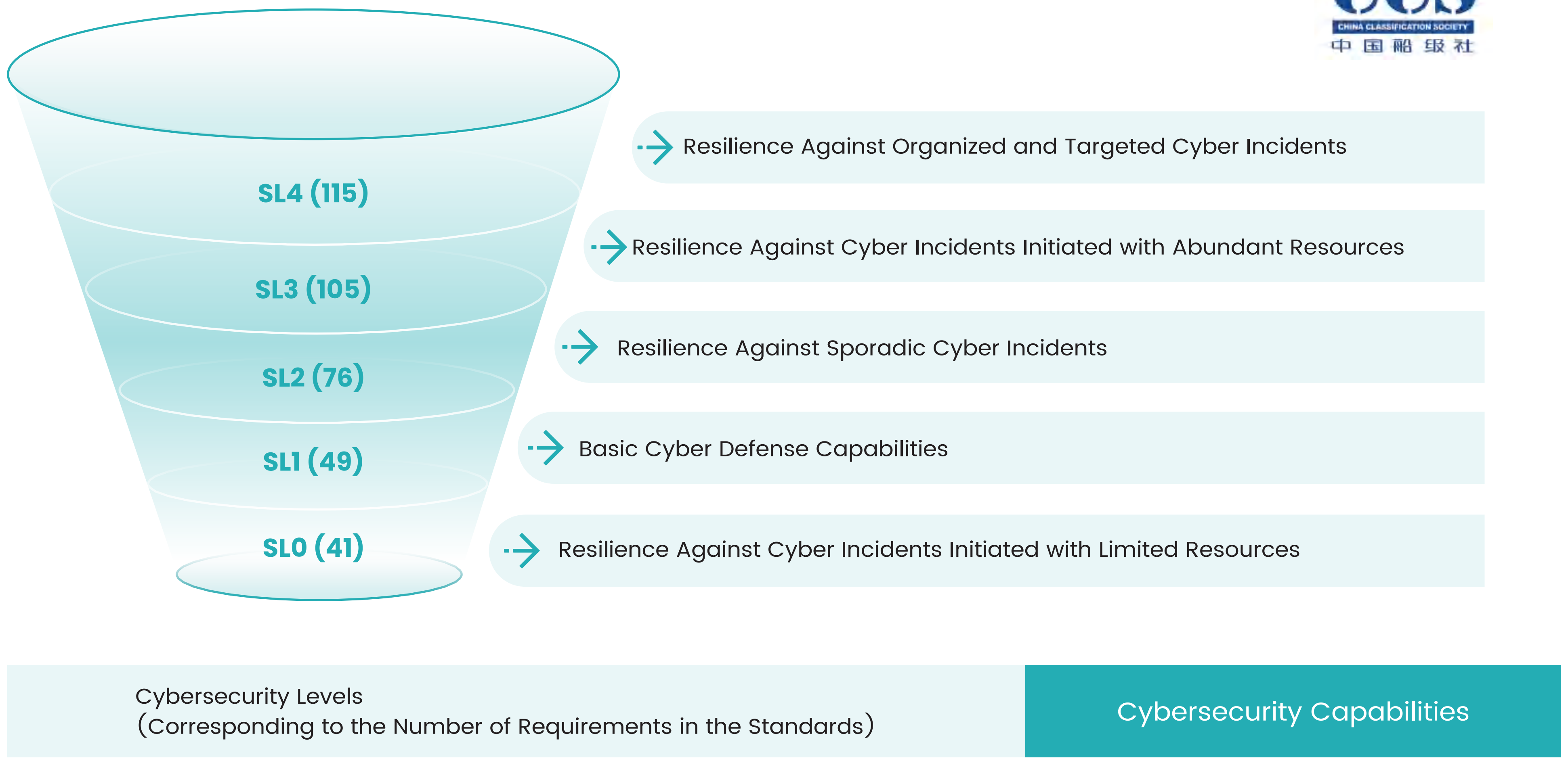
Incident Response

Respond to actions that violate Cybersecurity requirements, notify relevant personnel, report necessary evidence, and take measures upon discovering incidents.

Resource Availability

Ensure the availability of the system to prevent critical services from being impacted or denied.

CBS Cybersecurity Classification Levels



SL4 (115) → Resilience Against Organized and Targeted Cyber Incidents

SL3 (105) → Resilience Against Cyber Incidents Initiated with Abundant Resources

SL2 (76) → Resilience Against Sporadic Cyber Incidents

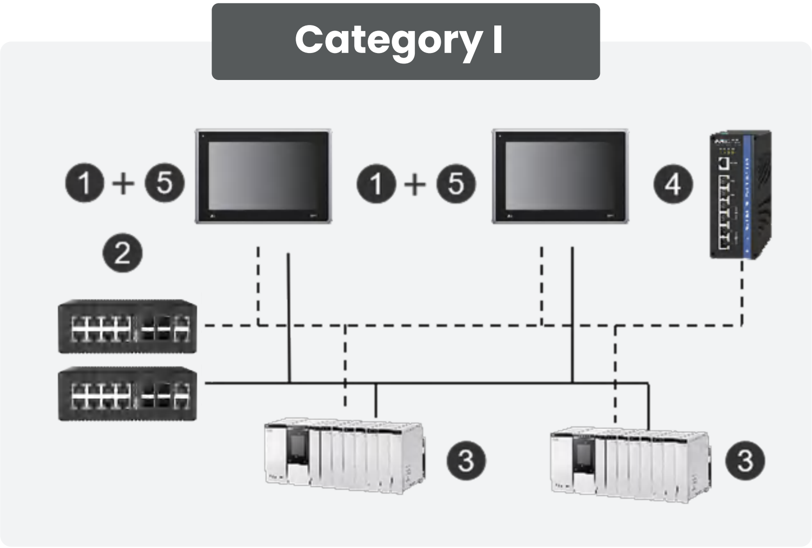
SL1 (49) → Basic Cyber Defense Capabilities

SL0 (41) → Resilience Against Cyber Incidents Initiated with Limited Resources

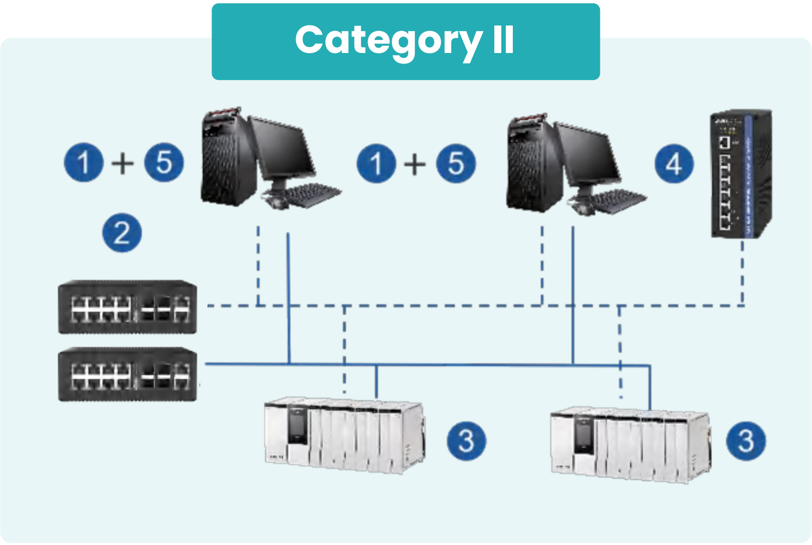
Cybersecurity Levels
(Corresponding to the Number of Requirements in the Standards)

Cybersecurity Capabilities

Category I



Category II



System Categories	Domestic Series Models of CBS	International Series Models of CBS
CBS Core Functional Components	① Monitoring Station (Touchscreen + SCADA + Configuration Software) 	① Monitoring Station (WINDOWS+SCADA + Configuration Software)
	② Switch ③ PLC & I/O Modules	
Additional Cybersecurity Equipment	④ Marine Network Firewall ⑤ Marine Defender System (software)	

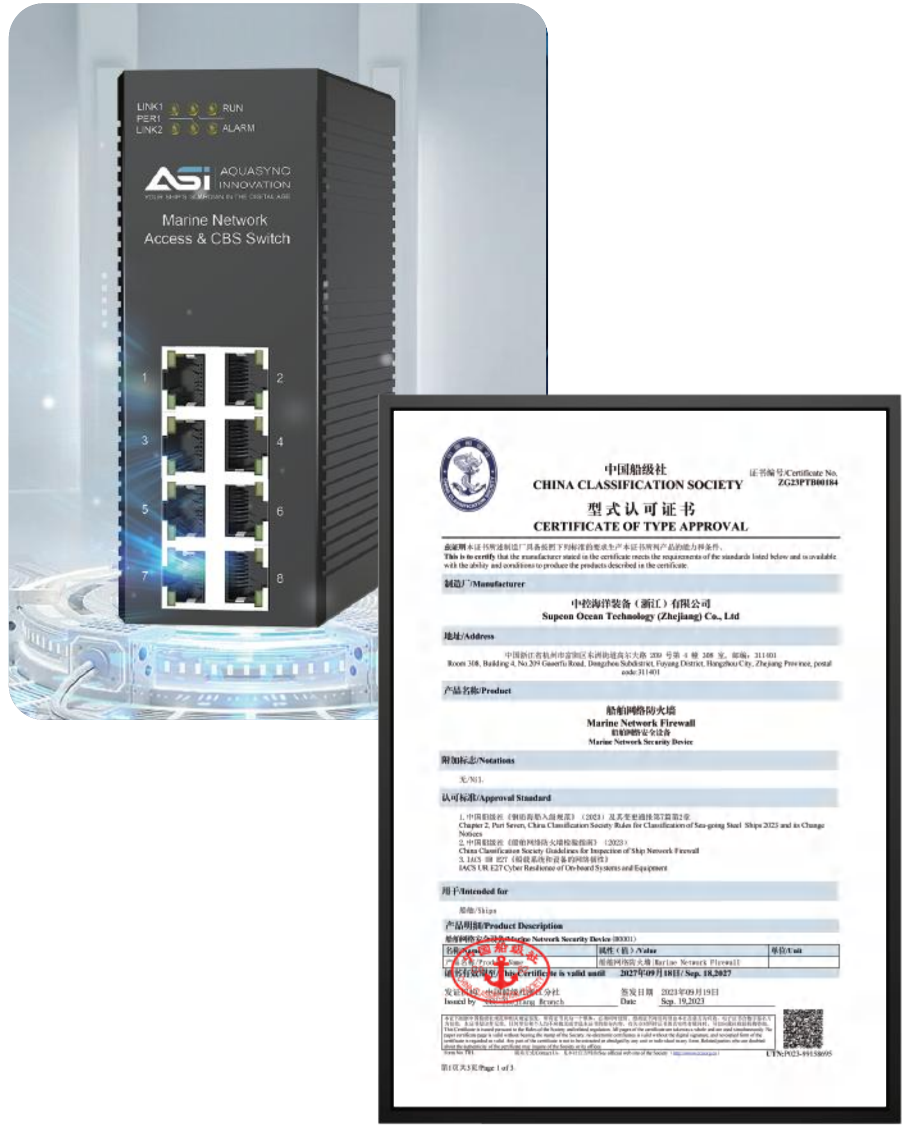
CBS Components - Specification Comparison Table (SL0)

In the CBS system, the components work together complementarily to meet the requirements of Security Level 0 (SL0). Each component provides protection against various threats to the CBS system, with the detailed network security clauses that each component meets as follows:

Core Functional Modules of CBS			Additional Network Security Equipment	
①	②	③	④	⑤
Monitoring Station	Switch	PLC & I/O Modules	Marine Network Firewall	Marine Defender System
35 Clauses	2 Clauses	11 Clauses	9 Clauses	7 Clauses

"As indicated in the table above, to achieve Network Security Level SL0, the system must include both a ship network firewall and ship endpoint security software."

Marine Network Switch Product Introduction



中国船级社
CHINA CLASSIFICATION SOCIETY
证书编号/Certificate No. ZG23PTB00184

型式认可证书
CERTIFICATE OF TYPE APPROVAL

兹证明本证书所述制造厂具备按照下列标准的要求生产本证书所列产品的能力和条件。
This is to certify that the manufacturer stated in the certificate meets the requirements of the standards listed below and is available with the ability and conditions to produce the products described in the certificate.

制造厂/Manufacturer

中控海洋装备（浙江）有限公司
Supeon Ocean Technology (Zhejiang) Co., Ltd

地址/Address

中国浙江省杭州市富阳区东洲街道高尔夫路 209 号第 4 幢 308 室，邮编：311401
Room 308, Building 4, No.209 Gaoerfu Road, Dongzhou Subdistrict, Fuyang District, Hangzhou City, Zhejiang Province, postal code:311401

产品名称/Product

船舶网络防火墙
Marine Network Firewall
船舶网络安全设备
Marine Network Security Device

附加标志/Notations

无/Nil.

认可标准/Approval Standard

1. 中国船级社《钢质海船入级规范》（2023）及其变更通报第7篇第2章
Chapter 2, Part Seven, China Classification Society Rules for Classification of Sea-going Steel Ships 2023 and its Change Notices
2. 中国船级社《船舶网络防火墙检验指南》（2023）
China Classification Society Guidelines for Inspection of Ship Network Firewall
3. IACS UR E27《船载系统和设备的网络韧性》
IACS UR E27 Cyber Resilience of On-board Systems and Equipment

用于/Intended for

船舶/Ships

产品明细/Product Description

船舶网络安全设备/Marine Network Security Device (00001)

名称/Name	属性（值）/Value	单位/Unit
产品名称/Product Name	船舶网络防火墙|Marine Network Firewall	

证书有效期至/This Certificate is valid until 2027年09月18日/ Sep. 18,2027

发证机构 中国船级社浙江分社
Issued by Zhejiang Branch

签发日期 2023年09月19日
Date Sep. 19,2023

中国船级社 CHINA CLASSIFICATION SOCIETY

[illegible] This Certificate is issued pursuant to the Rules of the Society [illegible]

Form No. [illegible] 联系方式/Contact Us [illegible] UTN:P023-[illegible]

第1页 共3页/Page 1 of 3

The **SIE1008** Marine Network Access/CBS Switch provides 8 adaptive 10/100M Ethernet ports with optional PoE power supply, supporting the 802.3af/at power supply standards. It adopts a store-and-forward switching method and complies with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab, and IEEE 802.3z standards, delivering non-blocking, line-speed forwarding. The SIE1008 Marine Network Access/CBS Switch can establish a fast-recovery self-healing ring network, with a self-healing time of less than 20ms, and supports automatic detection and switching of loops. It offers a comprehensive range of network management functions, including support for MR-ring rapid ring networks, compatibility with STP/RSTP/MSTP, port-based VLANs, 802.1Q-based VLANs, QoS, IGMP Snooping, broadcast storm suppression, port aggregation, port mirroring, port status management, SNMP, and NTP time synchronization.

The **SO-460-SW** is a network switch specifically designed for maritime network environments, compliant with the IEC 61162-460 standard, to deliver high-security and high-reliability network connectivity.
As a core infrastructure component of the 460-Network, it connects multiple 460-Nodes and other network devices, ensuring efficient and secure data transmission across the network.

Product characteristics

▶▶▶ SIE1008	▶▶▶ SO-460-SW
Supports MR-Ring fast ring network (self-healing time < 20 ms) and is compatible with STP/RSTP/MSTP spanning tree protocols	Complies with maritime cybersecurity certification (IACS UR E27 Rev.1 and IEC 61162-460 Ed.3.0), supports 460-Switch functionality.
Supports Port-based VLAN, IEEE 802.1Q VLAN, and GVRP protocol	Supports redundant network topologies (including ring networks and dual-link configurations), ensuring that single points of failure do not affect critical node communication functions.
Supports dynamic and static link aggregation	Ensures reliable connectivity for critical and non-critical device nodes, with redundancy switchover recovery time ≤5 seconds, meeting the high availability requirements of ISO 16425.
Supports MAC address-based port locking to prevent unauthorized access	Integrated cybersecurity modules include port security control, VLAN traffic isolation, and ACL access control lists.
Supports SNMPv1/v2 network management protocols at different levels	Supports audit log recording and configuration backup/rollback functions, ensuring operational traceability and system stability.
Multiple network management methods: Web, SNMP, Telnet, console	

Product Specifications

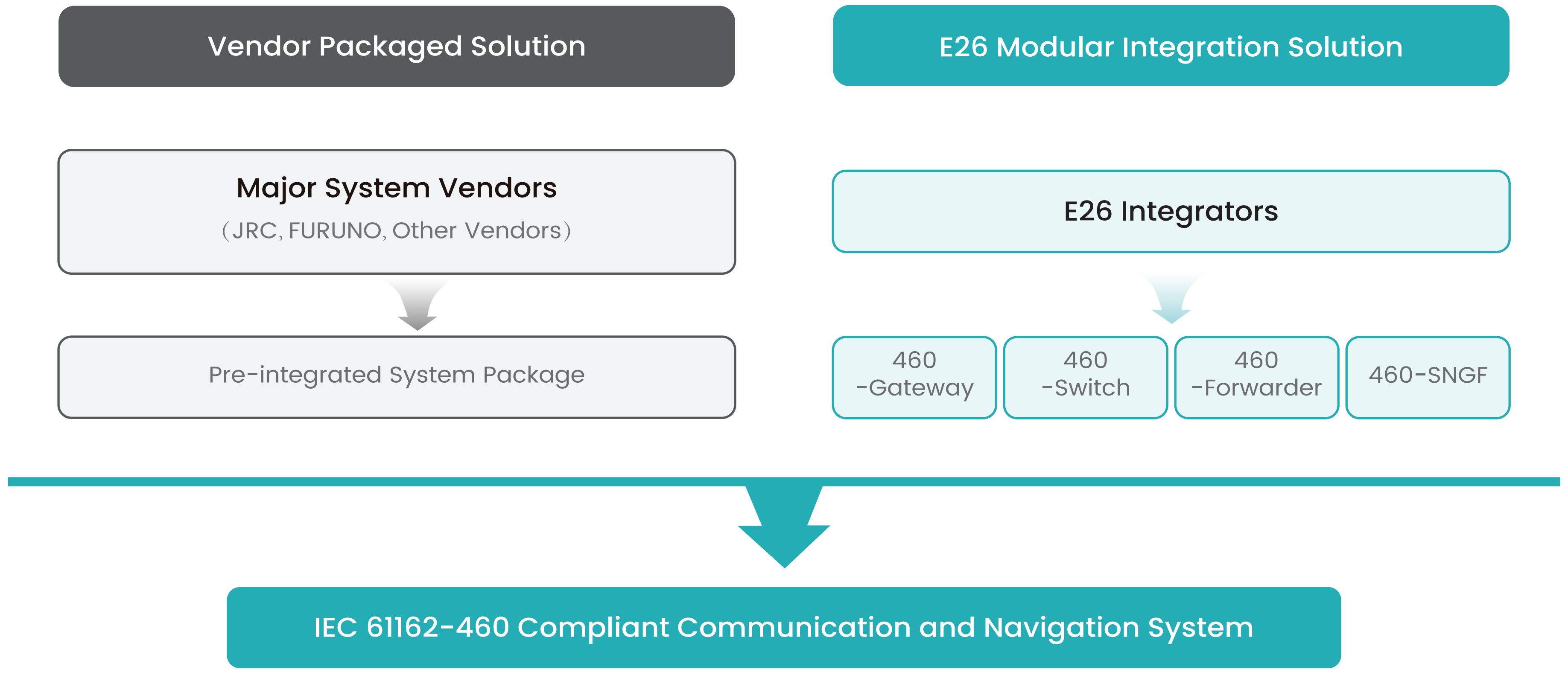
Model	SIE1008
Interface	
RJ45 Ports	8× 10/100M auto-negotiation Ethernet ports
POE (Optional)	Supports 802.3af/at power standards
Switching Features	
Backplane Bandwidth	1.6Gbps
Packet Forwarding Rate	1.2Mpps
Packet Buffer	4.1Mbit
MAC Address Table	Supports 8K MAC addresses Supports 512 multicast groups
Software Characteristics	
Flow Control	Supports IEEE802.3x flow control (full-duplex) Supports port-based flow control
Storm Suppression	Broadcast, multicast, unknown unicast rate limiting independently Supports PPS/Mbps-based storm suppression
Storm Suppression	Broadcast, multicast, unknown unicast rate limiting independently Supports PPS/Mbps-based storm suppression
VLAN	Supports 4096 VLANs, port-based VLAN, MAC-based VLAN, IP-based VLAN, 802.1Q VLAN, GVRP
ACL	Supports L2~L4 packet filtering with classification based on source/destination MAC, source/destination IPv4 address, TCP/UDP port Supports 1.5K ACL entries
Port Aggregation	Supports static aggregation Supports LACP static/dynamic aggregation
Ring Protocol	Supports MR-ring (self-healing time <20ms), STP/RSTP/MSTP, ERPS v1/v2, MRP, MRPP
Self-healing Ring Topology	Supports multiple self-healing rings Supports tangent rings
Multicast	Supports IGMP Snooping v1/v2 Supports GMRP
DHCP	DHCP Client, DHCP Relay, DHCP Server
Reliability	Supports backuplink
Multicast	Supports IGMP Snooping v1/v2 Supports GMRP
Time Service	Supports NTP Server Supports SNTP

3.3

YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

Navigation and Radiocommunication Physical Component (IEC 61162-460)

460 Practical Implementation - Communication and Navigation System: IEC 61162-460



Vendor Packaged Solution

Major System Vendors
（JRC, FURUNO, Other Vendors）

Pre-integrated System Package

E26 Modular Integration Solution

E26 Integrators

460 -Gateway

460 -Switch

460 -Forwarder

460-SNGF

IEC 61162-460 Compliant Communication and Navigation System

Device Overview

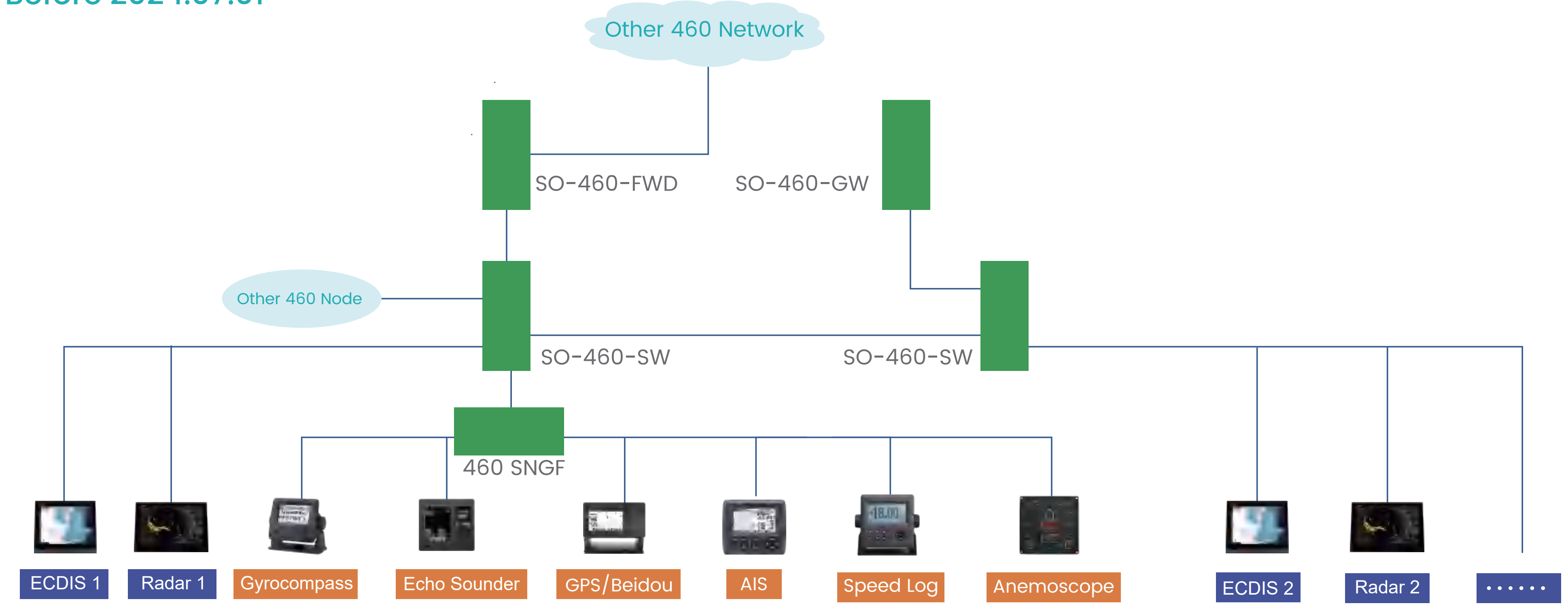
Statistical time:June 1, 2025

Device Name	Function Product Introduction	Corresponding Specification Requirements											Certificate
		E26	E27	CCS	DNV	ABS	BV	RINA	KR	RS	LR	NK	
Class Notation (E26)		Rev.1	Rev.1	2024 CyberSecurity (P[SL0])	2024 Cyber Secure (Essential)	2024 CR	2024 Cyber Resilient	2024 Cyber Resilience	2024 Cyber Resilience	2024 Cyber Resilience	2024 Cyber Resilience	2024 Cyber Resilience	
460-Gateway	Connected to 460-networks and to Uncontrolled	1.3.2	1.3	1.1.1.5	Pt4.CH9. Sec.13:5. 1.1 Pt4.CH9. Sec 14:5	Pt4,ch9, Sec14 5	NR659, Ch3, Sec2:1.3 1 NR659, Ch5, Sec2:1 3 1	PtC, Ch 3, Sec 4:1.4.2	CH1. Sec1:106 CH3. Sec1:102	Part XXI 1.1.5	Pt6. CH1. Sec.2:2.16	Chapter 1 4	IEC61162-460 Certificate
460-Switch	Interconnect Nodes on A 460-network												
460-Forwarder	Exchange Data Streams Between A 460-network and other Controlled Networks												
460-SNGF	Convert GPS, AIS and other devices that transmit via serial port into network port for transmission												

460 Practical Implementation - Communication and Navigation System: IEC 61162-460

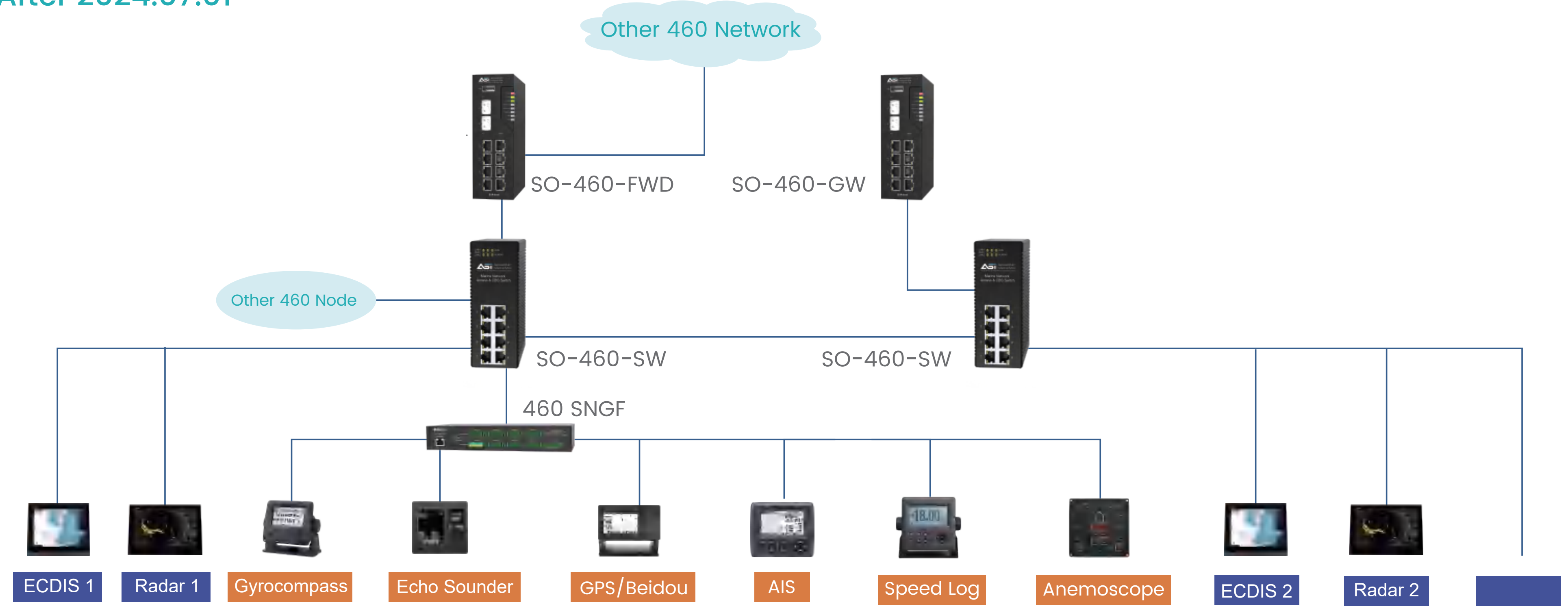
- 🟦 Equipment certified by 460, designated as a 460 node
- 🟧 The original equipment applied for 460 exemption inspection, adding 450 SNGF to become a 450 Node with SNGF
- 🟩 Other 460 Network, Untrusted Network

Before 2024.07.01



- 🟦 Equipment certified by 460, designated as a 460 node
- 🟧 The original equipment applied for 460 exemption inspection, adding 450 SNGF to become a 450 Node with SNGF

After 2024.07.01



Distribution of functions around 460-Network

IEC61162-460

Function	SO-460-SW	SO-460-FWD	SO-460-GW
Network Access Control (6.2.4.2)	✓	✓	✓
Syslog Implemented (Source) (8.1)	✓	✓	✓
Data Output Bandwidth Defined (5.16.2.2.1)	✓	✓	✓
Network Traffic Management (5)	✓	✓	✓
Security -No Wireless (6.2.1)	✓	✓	✓
Security -Excessive Traffic Protection (6.2.2.1, 5.3.3)		✓	
Security -Dos Attack Icmp Igmp Protection (6.2.2.2)	✓	✓	✓
Security -Access Control (Password) (6.2.4.1)	✓	✓	✓
Redundancy (7.1, 7.2)	As Installed ✓	As Installed ✓	✓
Network Monitoring	✓ (For at Least One Node or Switch, 8.2.1)		✓(List Of Connections)

Function	SO-460-SW	SO-460-FWD	SO-460-GW
If Applicable -Reds Security (6.2.3)	✓	✓	✓
Configuration of Network Flows (5.2.1, 5.3.2)	✓	✓	
Allocation of Bandwidth (5.2.1, 5.3.2)	✓	✓	
In/out Traffic in Register Allowed, Deny Other Traffic (6.2.4.2)	✓		
If Applicable -Vlan Config Per Interface (5.2.1)	✓		
Igmp Multicast Snooping (5.2.1)	✓		
Syslog (Sink)	✓ (For at Least One Node Or Switch, 8.2.1)		
Caution/Warning Source (6.3.4, 6.3.5, 8.2.7.1)	✓		✓
Firewall (6.3.2)		✓	✓

Product Introduction

IEC61162-460

The SO-460-FWD is a network forwarding device specifically designed for maritime network environments. It securely transmits data between the 460-Network and other trusted networks (such as other 460-Networks or onboard control networks).
Compliant with the IEC 61162-460 standard, it ensures secure cross-network communication by providing data flow isolation and filtering capabilities.

The SO-460-GW is a high-performance maritime cybersecurity ateway specifically engineered for shipboard network environments, fully compliant with the IEC 61162-460 standard.
Functioning as a secure bridge between 460-Network and untrusted networks (such as the Internet), it delivers robust security protection and access control capabilities to safeguard vessel networks against external threats.

Product Specifications

Attribute	MGS-6910-GT8GX2
Input/Output Interface	
Alarm Function Channel	Resistive load only: 1 A @ 24 VDC
Button	Reset button
Digital Input Channels	+13 to +30 V for state 1 -30 to +3 V for state 0 Max. input current: 8 mA
Ethernet Interface	
10/100BaseT(X) Ports (RJ45 connector)	8
1000BaseSFP Slots	2
DoS and DDoS Protection	
Techniques	ARP Flood Attack FIN Scanning ICMP Flood Attack TCP Session w/o SYN NMAP-ID Scanning NMAP-Xmas Scanning Null Scan SYN/FIN Scanning SYN/RST Scanning SYN Flood Attack Xmas Scanning

Product Specifications

Attribute	MGS-6910-GT8GX2
Ethernet Software Features	
Broadcast Forwarding	IP Directed Broadcast, Broadcast Forwarding
Management	Backpressure Flow Control, DDNS, DHCP Server/Client, Web Console (HTTP/HTTPS), LLDP, QoS/CoS/ToS, SNMPv1/v2c/v3, Telnet, TFTP, HTTPS, SSH
Redundancy Protocols	RSTP, STP, Turbo Ring v2, Turbo Chain
Routing Throughput	Max. 50K packets per second / 500 Mbps (based on RFC 2544)
Routing Table	Max. 4K routing rules
Concurrent Connections	Up to 120K (based on RFC 3511)
Connections per Second	Up to 6K (based on RFC 3511)
Routing Redundancy	VRRP

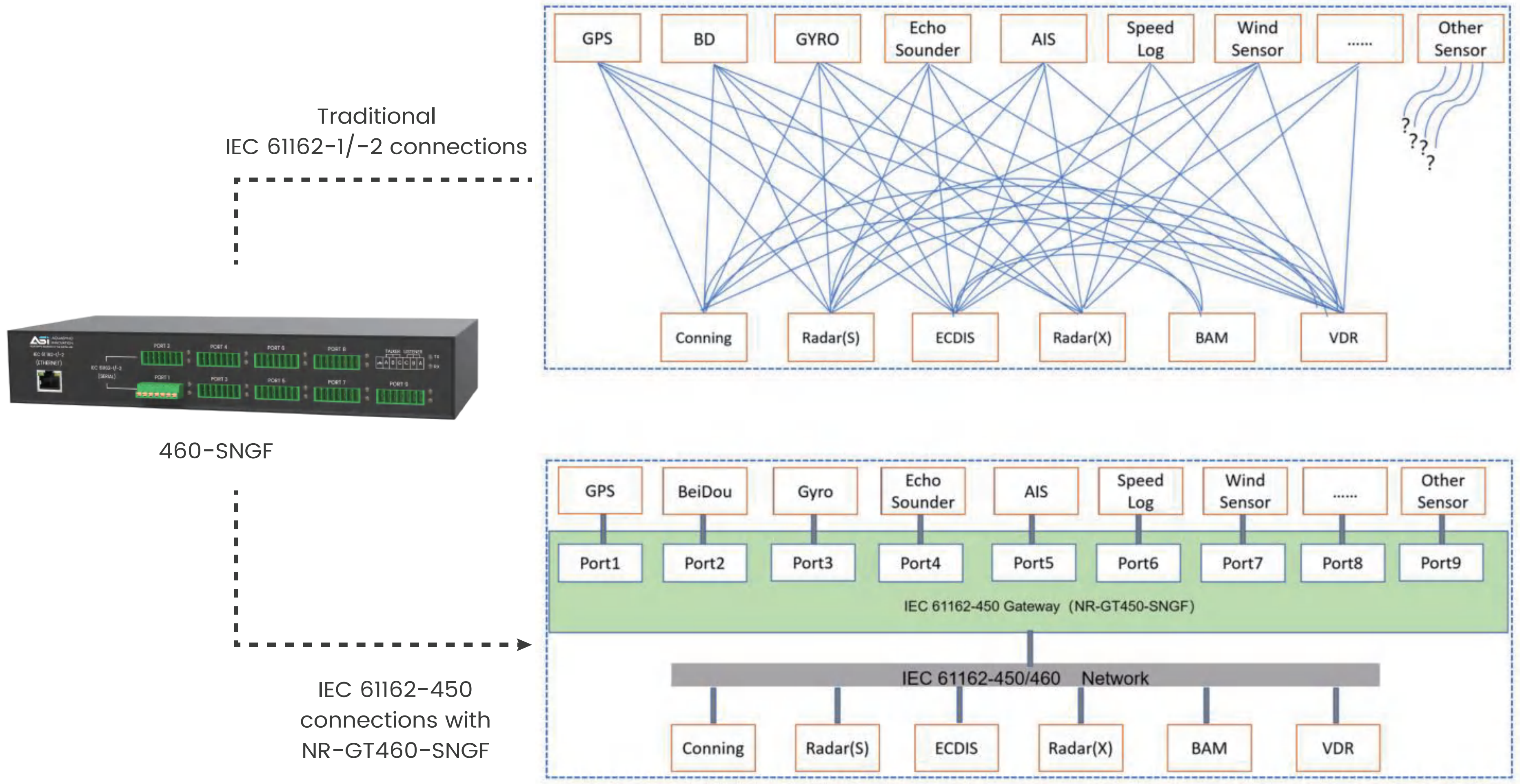
Attribute	MGS-6910-GT8GX2
Security	Secure Boot, IPsec, L2TP (Server), RADIUS, Trusted Access Control TACACS+, SCP, SFTP, NTP Authentication, Syslog Authentication
Time Service	NTP Server/Client SNTP
Unicast Routing	OSPF, RIPv1/v2, Static Routing
Multicast Routing	Multicast Routing
IGMP v1/v2/v3	Filtering
Switching Features	
VLAN ID Range	VID 1 to 4094
IGMP Groups	1000
Max. Number of VLANs	32
MTBF	350,000 hours

460 SNGF

Technical Data

- ◆ 9x isolated full-duplex RS-422/485 serial ports (9 talkers + 9 listeners), compliant with IEC 61162-1/-2 standards
- ◆ 1x 10/100M Ethernet port
- ◆ LED indicators for data transmission and reception on each serial port
- ◆ Compliant with IEC 61162-450 standard
- ◆ Configurable SFIDs for each serial port
- ◆ Configurable transmission groups and sentence filtering on each serial listener
- ◆ Configurable sentence forwarding rules on each serial transmitter
- ◆ Ethernet-based configuration. All settings can be configured over Ethernet, including the IP address
- ◆ (Optional) additional SFIDs to calculate and output fused data based on multiple sensors
- ◆ (Optional) industrial fieldbus (e.g. Modbus) support
- ◆ 24V DC and 110/220V AC dual power supply
- ◆ Operating temperature range: -15~+55°C

Easier Connections with460-SNGF



Traditional
IEC 61162-1/-2 connections

460-SNGF

IEC 61162-450
connections with
NR-GT460-SNGF

3.4

YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

Network Information Integration System (IT)

Access Switch-POE

- 24×10/100/1000Base-T RJ45 ports（supporting PoE+ power supply）
- 2×Independent Gigabit SFP ports
- Maximum system PoE power budget: 375W
- Maximum PoE power per port: 30W
- PoE ports support priority mechanism
- Supports three operating modes: Video Surveillance, VLAN Isolation, and Standard Switching

CCTV-NVR

• Supports connection to network cameras compliant with Open Network Video Interface, RTSP, and GB28181 standards

• Supports preview, storage, and playback of high-definition network video up to 32 megapixels

• Supports adaptive access for H.265 and H.264 encoded front-end devices

• Features 2 HDMI ports and 1 VGA port, supporting 8K+1080P or dual 4K heterogeneous output

• Supports instant playback during live preview and simultaneous playback of up to 16 channels

• Supports two storage modes: hard disk quota and disk group for customized recording allocation

• Provides 2 adaptive Ethernet ports supporting network fault tolerance and multi-address configuration

Optional Equipment

Video Compression Module

- **High Compression:**

Visually lossless compression with ratios of 15–30x for static scenes and 6–8x for dynamic scenes.

- **Visual Quality Preservation:**

Maintains visual quality to support AI tasks such as license plate and face recognition.

- **Low Latency:**

Encoding delay under 100ms.

- **Dual-Stream Output:**

Simultaneous main and substream (360P/D1) output.

AI Intelligent Workstation

- **High Performance:**

17.6 Tops computing power, supports 32-channel H.264/H.265 real-time decoding.

- **Easy Development:**

Compatible with major deep learning frameworks, Docker, and Python. Offers open-source development tools.

- **Extensible Interfaces:**

Supports 4G/5G wireless expansion and SSD storage.

- **Robust & Reliable:**

Low-power design, operates from -20℃ to 60℃, effective heat dissipation.

Camera

Name	Outdoor Anti-Corrosion PTZ Camera	Outdoor Dome Camera	Outdoor Bullet Camera	Indoor Bullet Camera	Indoor Fixed Dome Camera	Outdoor Anti-Corrosion PTZ Camera	Outdoor Dome Camera	Outdoor Bullet Camera	Outdoor Bullet Camera	Outdoor Bullet Camera	Outdoor Bullet Camera	Outdoor Bullet Camera	Indoor Fixed Dome Camera	Indoor Fixed Dome Camera	Explosion Proof Dome Camera	Explosion Proof PTZ Camera	Explosion Proof Bullet Camera	Explosion Proof Bullet Camera
Model	ASI-2DY7430I-CWX	ASI-2DF8C432MX-AY	ASI-2XC6646-IZHRSY	ASI-2CD2245CV6-L	ASI-2CD2345CV4-I	ASI900	ASI600	ASI-VL404IRW01	ASI-VL432IRW01	ASI801	ASI-FL404IR02	ASI300	ASI2000	ASI-2CD1143G0-I	EX-ASIPTZ4010IR04N	EX-ASIPTZ4033IRW01	EX-ASI404IRW01	EX-ASI404IR02
Product Image																		
Pixel	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP
Protection Grade	IP68	IP67	IP68	IP66	IP67	IP68	IP67	IP68	IP68	IP68	IP68	IP68	IP66	IP67	IP67	IP68	IP68	IP68
Focal Length	Zoom available, 32x	Zoom available, 32x	Zoom available, 4x	Fixed focus	Fixed focus	Zoom available, 33x	Zoom available, 5x	Zoom available, 4x	Zoom available, 32x	Zoom available,18x	Fixed focus	Fixed focus	Fixed focus	Fixed focus	Zoom available, 5x	Zoom available, 33x	Zoom available, 4x	Fixed focus
Chinese Interface	√	√	√	√	√	√	√	/	/	√	/	√	/	/	√	√	/	/
English Interface	/	/	/	/	/	√	√	√	√	√	√	√	√	√	√	√	√	√
DC12V Power Supply	/	/	/	/	/	/	/	/	/	√	/	/	/	/	/	/	/	/
AC/DC24V Power Supply	/	√	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
AC100V-240V Power Supply	√	/	/	/	/	√	/	/	√	/	/	/	/	/	/	√	/	/
POE Power supply	/	/	√	√	√	/	√	√	/	/	√	√	√	√	√	/	√	√
Heating	√	√	√	/	/	√	/	√	√	√	/	/	/	/	/	√	√	/
Infrared	150m	500m	60m	30m	30m	150m	40m	100m	200m	/	30m	15m	30m	30m	40m	150m	100m	30m
Wiper	√	√	√	/	/	√	/	√	√	√	/	/	/	/	/	√	√	/
Explosion-proof	/	/	/	/	/	/	/	/	/	/	/	/	/	/	ATEX:II 2G Ex db IIC T6 Gb	ATEX:II 2G Ex db IIC T6 Gb	ATEX:II 2G Ex db IIC T6 Gb	ATEX:II 2G Ex db IIC T6 Gb
Suggested Installation Location	Compass deck, mast, deck, bow and stern monitoring	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Engine Room	Cab, central control room, indoor rooms and corridors	Compass deck, mast, deck bow and stern monitoring	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Cab, central control room, indoor rooms and corridors	Cab, central control room, indoor rooms and corridors	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Compass deck, mast, deck bow and stern monitoring	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage

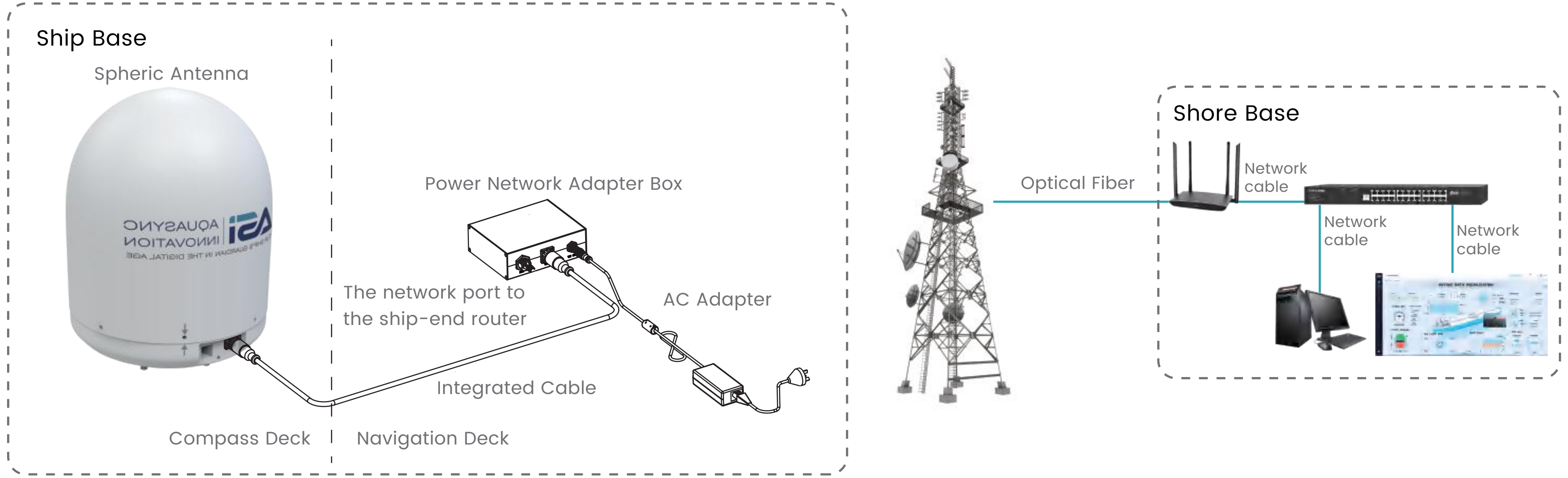
5G Cellular Mobile Network

System Introduction

5G cellular mobile network antenna receives and amplifies the shore operator's base station signal to connect the Internet signal to the ship side router so that the equipment and staff can connect to each other. Compared with satellite communication costs, the cost of 5G cellular mobile networks is lower, saving communication costs.

Technical Parameters

Frequency Range of Antenna	650-6000MHz
Signal Coverage Range	Within 25 Nautical Miles
Wind Resistance Strength	60m/s
Environment Rating	IP67
Average Speed of Up And Down	4G uplink at 28.51Mbps and downlink at 48.57Mbps;
	5G uplink at 80.40Mbps and downlink at 348.31Mbps;



Maritime LEO Satellite Communication System

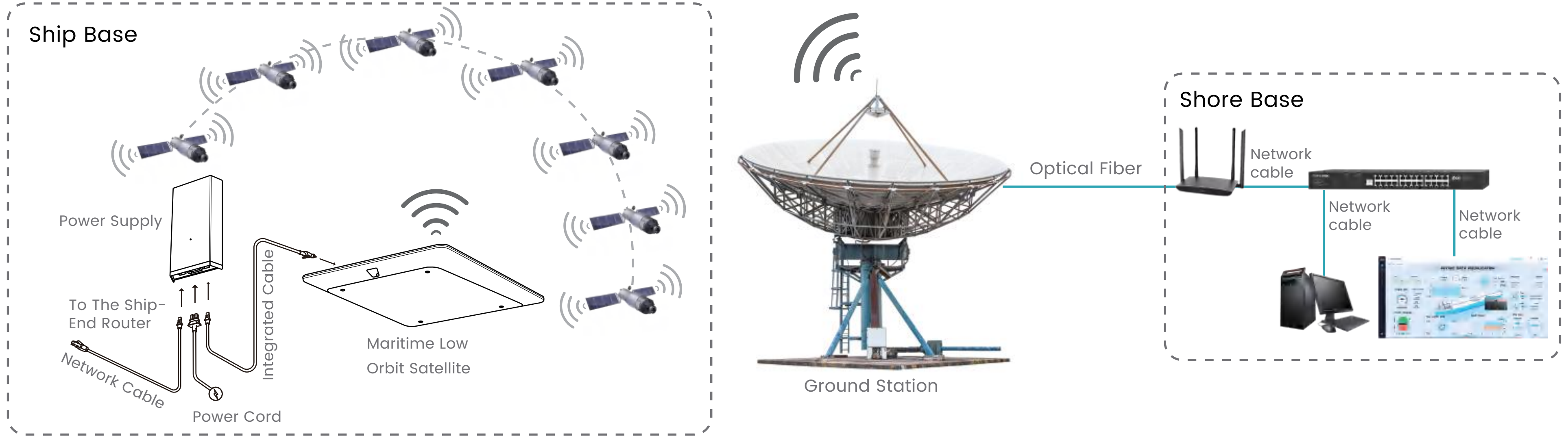
System Introduction

The maritime LEO satellite system can provide high bandwidth, low latency broadband and communication services for global consumers and commercial users.

Technical parameters

Field of View	140°
Dimensions	57.5x51.1cm
Support Up and Down Speeds	8-25Mbps Up and 40-220Mbps Down
Environment Rating	IP56

Please note that due to the relatively new technology of maritime LEO satellite services, there is no network service within 15 nautical miles offshore in countries where their use is not allowed. Generally, there is network service beyond 15 nautical miles offshore, and the distance may vary among different countries. The actual effect shall prevail.



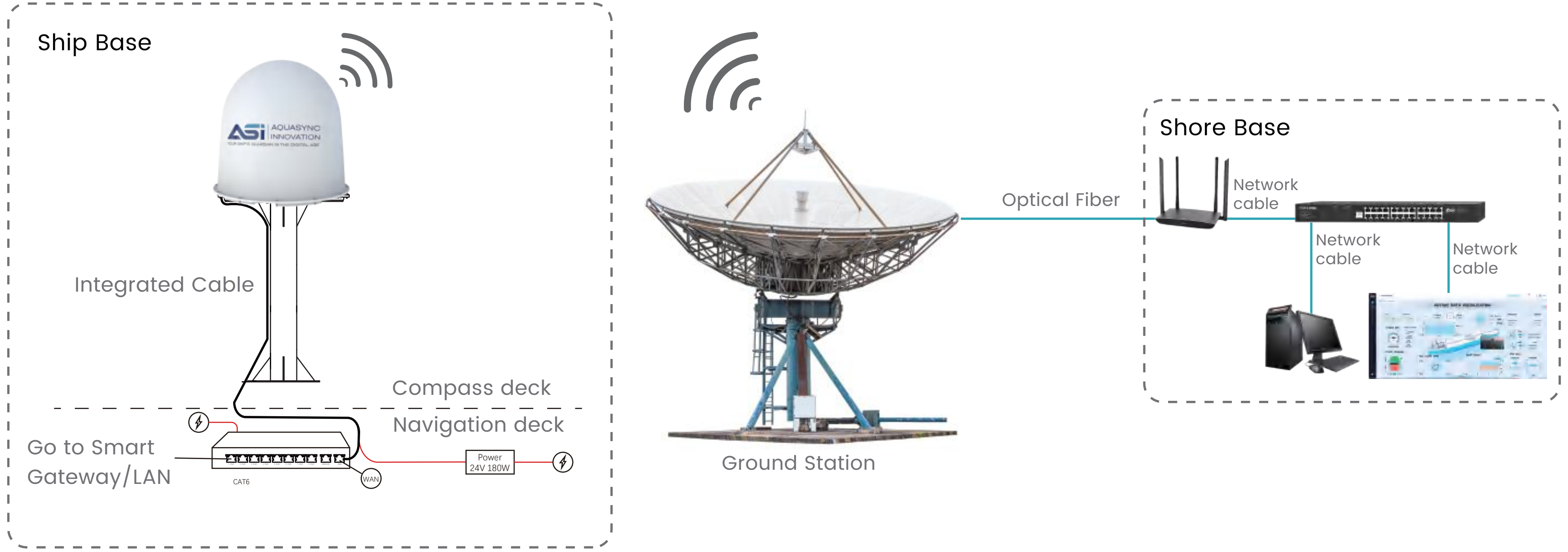
VSAT Satellite Communication System

System Introduction

The VSAT system is composed of a hub station and many remote VSATs scattered in each user's location. It can access the Internet without any ground lines, and is not limited by terrain, distance and ground communication conditions.

Technical parameters

Antenna Type	Three-Axis (Polarized) Ship Mounted Dynamic Communication
Antenna Diameter	100cm
BUC	8W
Environment Rating	IP56



WLAN Access Controller Manager

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WLAN Access Controller Manager
PWR
SYS
1
2
3
4
5
Link/Act
TL-AC100

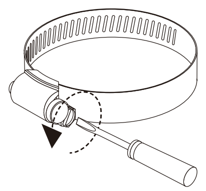
- Automatically discover and centrally manage APs, with support for up to 100 APs
- AC is deployed in bypass mode, requiring no changes to the existing network architecture for easy deployment
- Centrally configure wireless networks, supporting SSID and Tag VLAN mapping
- Supports multiple user access authentication methods, including MAC authentication, Portal authentication, and WeChat Wi-Fi connection
- Supports AP load balancing to evenly distribute the number of wireless clients connected to APs
- Prohibits weak-signal clients from accessing and kicks out weak-signal clients
- Enables and disables AP LED lights

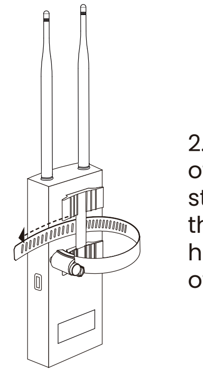
Wall-mounted AP

Model	TLAPI901G Diaphragm Version
Installation Method	Pole/Wall Mounting
Dimensions	209×95×43mm
Wireless Speed	2.4GHz Band: 600Mbps 5GHz Band: 1300Mbps
Ports	1 × 10/100/1000Mbps RJ45 Port 1 × 1000Mbps SFP Port (Industrial-grade optical module recommended, operating temp ≥85°C) 1 × DC Power Port
Antenna	External Dual-band Waterproof Detachable Omnidirectional Antenna
Antenna Coverage	360°
LED Indicator	1 × System LED
Buttons	1 × RESET Button 1 × FAT/FIT Mode Toggle Switch 1 × EasyMesh Button
Power Supply	53.5VDC/0.45A Passive PoE, 100M max power distance IEEE 802.3af/at Standard PoE 12–53.5V DC Input (Includes DC Power Adapter & PoE Injector)
Power Consumption	Max PoE Power: 15.5W PoE Idle Power: 5.2W
Management	FIT AP Mode: Managed by TP-LINK Wireless Controller (AC)

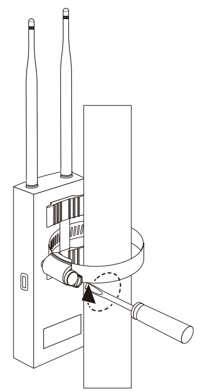
Installation Method 2: Pole Mounting

1.Use a flathead screwdriver to turn the screw on the stainless steel band counterclockwise until the band is fully loosened.



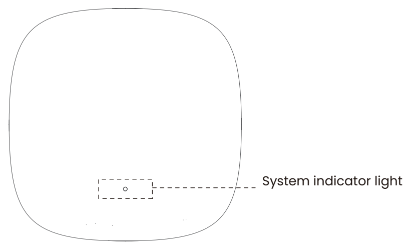


2. Insert the end of the stainless steel band through the small hole on the back of the wireless AP.

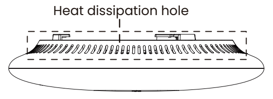


3. After determining the mounting position of the wireless AP on the pole, secure the AP firmly to the pole using the stainless steel band.

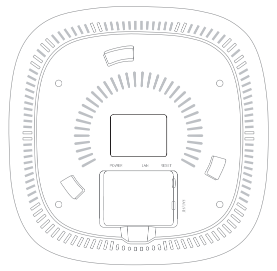
Indoor Ceiling-Mounted AP



Front view diagram



Schematic diagram of the AP heat dissipation hole surface



Schematic diagram of the bottom port and buttons

RJ45 Port Specifications

Port	Quantity	Function
LAN	1	Connects to IEEE 802.3at/af PoE-powered devices

LED Indicator Definitions

Name	Status		Description
System LED	Power-on Boot		Solid green during boot, then fast blinks twice when ready
	AP	Solid on	System operating normally
		Flickering	In FIT mode: blinks every 2s when not connected to AC
		Off	System error or power failure

RESET Button

The reset operation is as follows: While the AP is powered on, press and hold the RESET button until the system indicator light flashes, then release the button. The AP will automatically restore to factory settings and reboot. Once the reboot is complete, the system indicator light will remain steadily lit, indicating that the system has started normal operation.

DC Power Interface

When using DC power to supply the AP, you can connect a power adapter with a specification of 12V DC, 1A or higher.

FAT/FIT Mode Switch

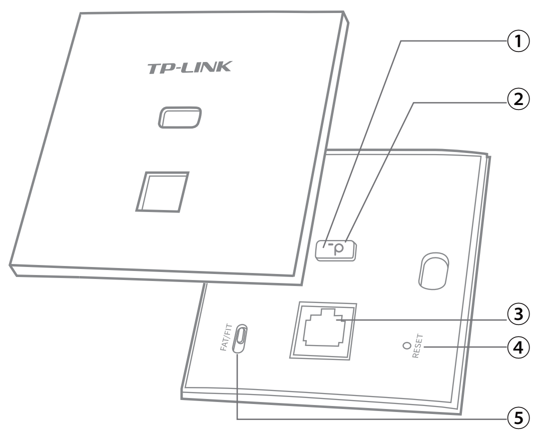
This switch is used to switch the AP's operation mode. When set to FIT, the AP works in FIT AP mode and cannot be managed individually it must be managed through a TP-LINK wireless controller. When set to FAT, the AP works in FAT AP mode and can be managed individually via the web interface, but cannot be managed by a wireless controller. The AP will automatically reboot after mode switching.

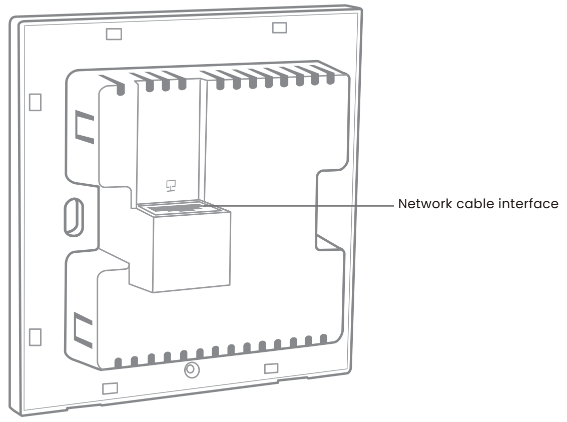
Wireless Access Point AP

Unit of external dimensions (mm)

Physical Pictures

Product Introduction





Note: Standard PoE power supply equipment that has obtained CCC certification and meets the requirements should be purchased for use in conjunction.

Installation Method	Direct installation to international 86-type network junction box
Dimensions	86×86×33mm (L×W×H)
Wireless Speed	• 2.4GHz：300Mbps • 5GHz: 1201Mbps
Ports	Front: 1× 10/100/1000Mbps RJ45 port Rear: 1× 10/100/1000Mbps RJ45 port
Antenna	Internal antenna
Indicators	1× System status LED
Buttons	1× RESET button 1× EasyMesh button 1× FAI/FIT mode toggle switch
Power Supply	Standard PoE powered
Power Consumption	• Max: 9.5W (PoE) • Idle: 3.45W (PoE)
Operating Environment	Temperature: 0℃ to 40℃ (operating) Humidity: 10% to 90% RH non-condensing Storage temperature: -40℃ to 70℃ Storage humidity: 5% to 90% RH non-condensing

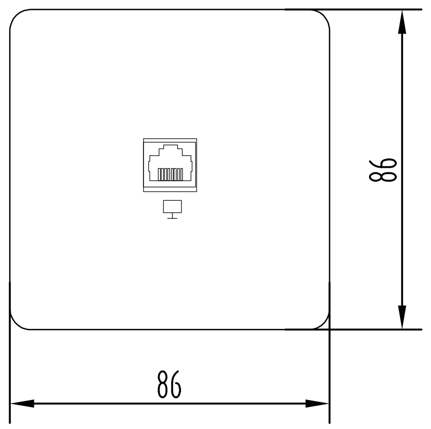
No.	Key press	Function description
①	EasyMesh Button	When the system is working normally, press the EasyMesh button to enter EasyMesh pairing mode.
②	LED Indicator Description	System Initialization：Solid on during startup, blinks 4 times after startup completes.
		After Initialization Solid on: System is operating normally. Blinking: Blinks once per second during AP firmware upgrade or EasyMesh pairing. Off: System error, power failure, or LED is manually disabled.
③	Ethernet Port or IPTV Port	
④	Reset Button	Press and hold this button while powered on until the LED blinks, then release.In FIT mode, the AP will reboot and fetch the latest configuration from the AC.In FAT mode, the AP will restore factory settings and reboot.
⑤	FIT/FAT Mode Switch	Used to switch the AP operation mode. In FIT mode, the AP must be managed via a TP-LINK wireless controller (AC). In FAT mode, the AP can be managed individually via the web interface. Note: After switching modes, the AP will automatically reboot.

Indoor Network Faceplate with 86-type Back Box

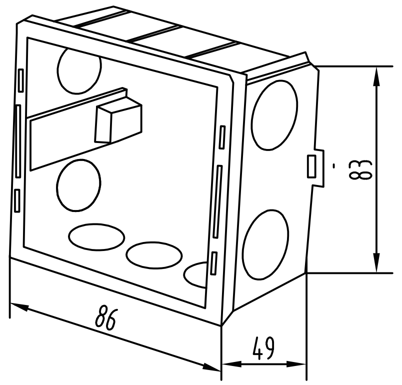
Unit of external dimensions (mm)

Physical Pictures

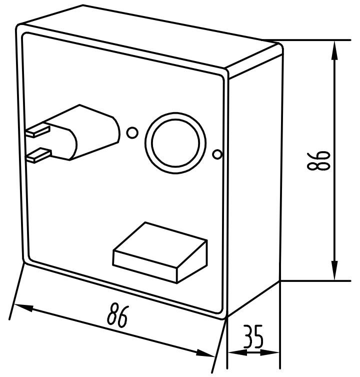
Front view diagram



Product Introduction



Recessed Junction Box



Surface-mounted Junction Box

Performance Description

Performance and Specifications	Compliance Standard: JB/T 8593
	Features: Comes with an appearance patent certificate
	Compatibility: Supports installation of Cat.8/6A/6/5e/3 modules
	Specifications: 1-port/2-port/4-port options available
Parameters and Characteristics	Style: Flat port
	Structure: Ports feature a spring-loaded door mechanism to protect modules and shield against dust and debris; panel adopts a modular design (dual-layer front and back panel) to conceal fixing screw holes
	Material: High-quality flame-retardant PC+ASB engineering material, compliant with UL 94 V-0
	Labeling: Transparent label windows above ports; accessories include embedded voice and data icons for easy label management and identification of data/voice ports
	Operating Temperature: -10 ~ +60℃

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ASI's Ship Cybersecurity Service Qualifications

Golden Triangle Alliance for a Comprehensive E26/27 Solution

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× FORTINET × DNV

SOLUTION DESIGN

ASi × DNV

- ◇ Ship Asset Inventory
- ◇ Ship Network Topology Diagram
- ◇ Ship Cybersecurity Design Description
- ◇ Risk Assessment for the Exclusion of CBSs (If applicable)
- ◇ Description of Compensating Countermeasures (If applicable)
- ◇ Ship Cybersecurity Testing Procedure
- ◇ Template File for Ship Cybersecurity and Resilience

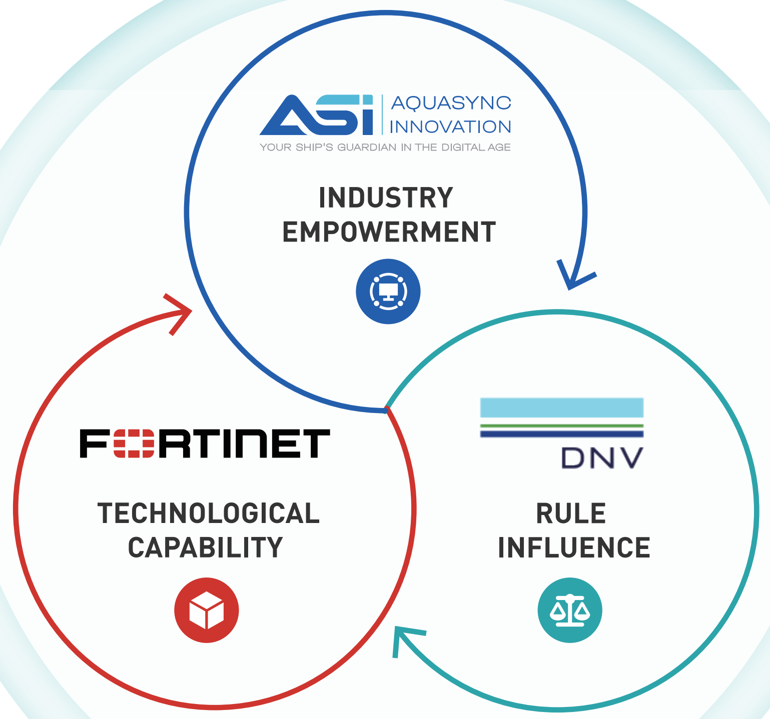
- ◆ ISO/IEC 27001 : 2022
- ◆ Certified Personnel: CISSP

PROVISION OF HARDWARE

ASi × FORTINET

- ◇ Marine Network Core Switch
- ◇ Marine Network Firewall
- ◇ Marine Defender System
- ◇ Cybersecurity Management Platform
- ◇ 460-Gateway
- ◇ 460-Switch
- ◇ 460-Forwarder
- ◇ 460-SNGF

- ◆ IEC 62443-4-1
- ◆ IEC 62443-4-2
- ◆ IEC 61162-460



CYBERSECURITY TEST SERVICE

ASi × DNV

- ◇ Providing Cybersecurity Capability Testing Based on Approved Test Procedures

- ◆ ISO/IEC 17025:2017(DNV&CNAS)
- ◆ Tester : CISSP

OPERATIONAL MAINTENANCE SERVICES

ASi × FORTINET × DNV

- ◇ Cybersecurity Operational Maintenance Services

- ◆ ISO/IEC 20000:2018
- ◆ IEC 62443-2-4
- ◆ ISO/IEC 17025:2017(DNV&CNAS)
- ◆ Certified Personnel: CISSP

ASI AQUASYNC INNOVATION
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×
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JOINT TENDER AGREEMENT

Solution Design

Providing Comprehensive Cybersecurity Solution Design for Vessels in Compliance with E26 Requirements

Hardware Provision

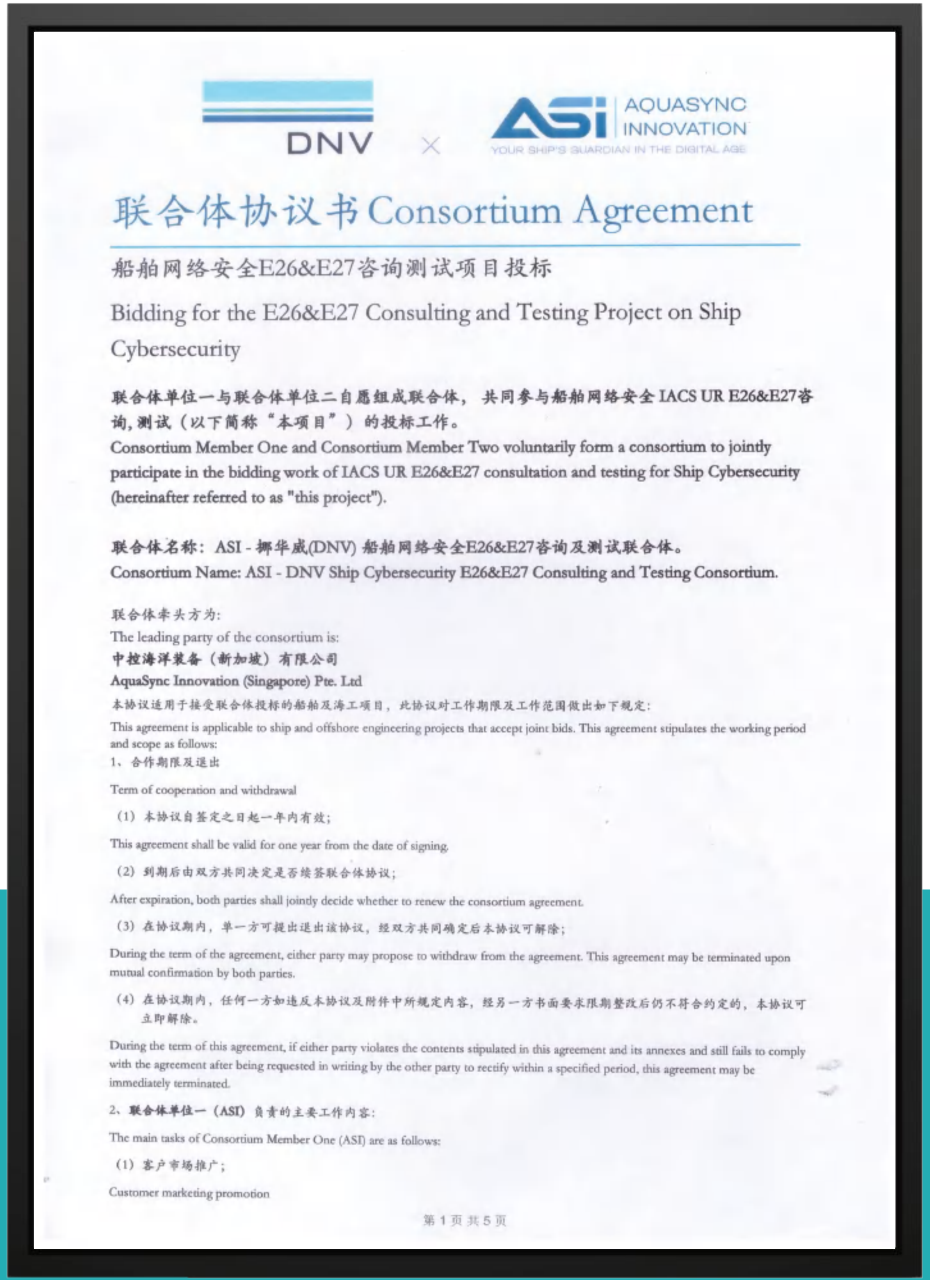
Providing Cybersecurity Devices Compliant with IEC 62443-4-1 and IEC 62443-4-2 Requirements

Cybersecurity Test Service

Providing Cybersecurity Capability Testing Based on Test Procedure

Operational Maintenance Services

Cybersecurity Operations and Annual Assessment



DNV × ASI AQUASYNC INNOVATION
YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

联合体协议书 Consortium Agreement

船舶网络安全E26&E27咨询测试项目投标

Bidding for the E26&E27 Consulting and Testing Project on Ship Cybersecurity

联合体单位一与联合体单位二自愿组成联合体，共同参与船舶网络安全 IACS UR E26&E27咨询,测试（以下简称“本项目”）的投标工作。
Consortium Member One and Consortium Member Two voluntarily form a consortium to jointly participate in the bidding work of IACS UR E26&E27 consultation and testing for Ship Cybersecurity (hereinafter referred to as "this project").

联合体名称：ASI - 挪华威(DNV) 船舶网络安全E26&E27咨询及测试联合体。
Consortium Name: ASI - DNV Ship Cybersecurity E26&E27 Consulting and Testing Consortium.

联合体牵头方为:
The leading party of the consortium is:
中控海洋装备（新加坡）有限公司
AquaSync Innovation (Singapore) Pte. Ltd

本协议适用于接受联合体投标的船舶及海工项目，此协议对工作期限及工作范围做出如下规定:

This agreement is applicable to ship and offshore engineering projects that accept joint bids. This agreement stipulates the working period and scope as follows:

1、合作期限及退出

Term of cooperation and withdrawal

（1）本协议自签定之日起一年内有效;

This agreement shall be valid for one year from the date of signing.

（2）到期后由双方共同决定是否续签联合体协议;

After expiration, both parties shall jointly decide whether to renew the consortium agreement.

（3）在协议期内，单一方可提出退出该协议，经双方共同确定后本协议可解除;

During the term of the agreement, either party may propose to withdraw from the agreement. This agreement may be terminated upon mutual confirmation by both parties.

（4）在协议期内，任何一方如违反本协议及附件中所规定内容，经另一方书面要求限期整改后仍不符合约定的，本协议可立即解除。

During the term of this agreement, if either party violates the contents stipulated in this agreement and its annexes and still fails to comply with the agreement after being requested in writing by the other party to rectify within a specified period, this agreement may be immediately terminated.

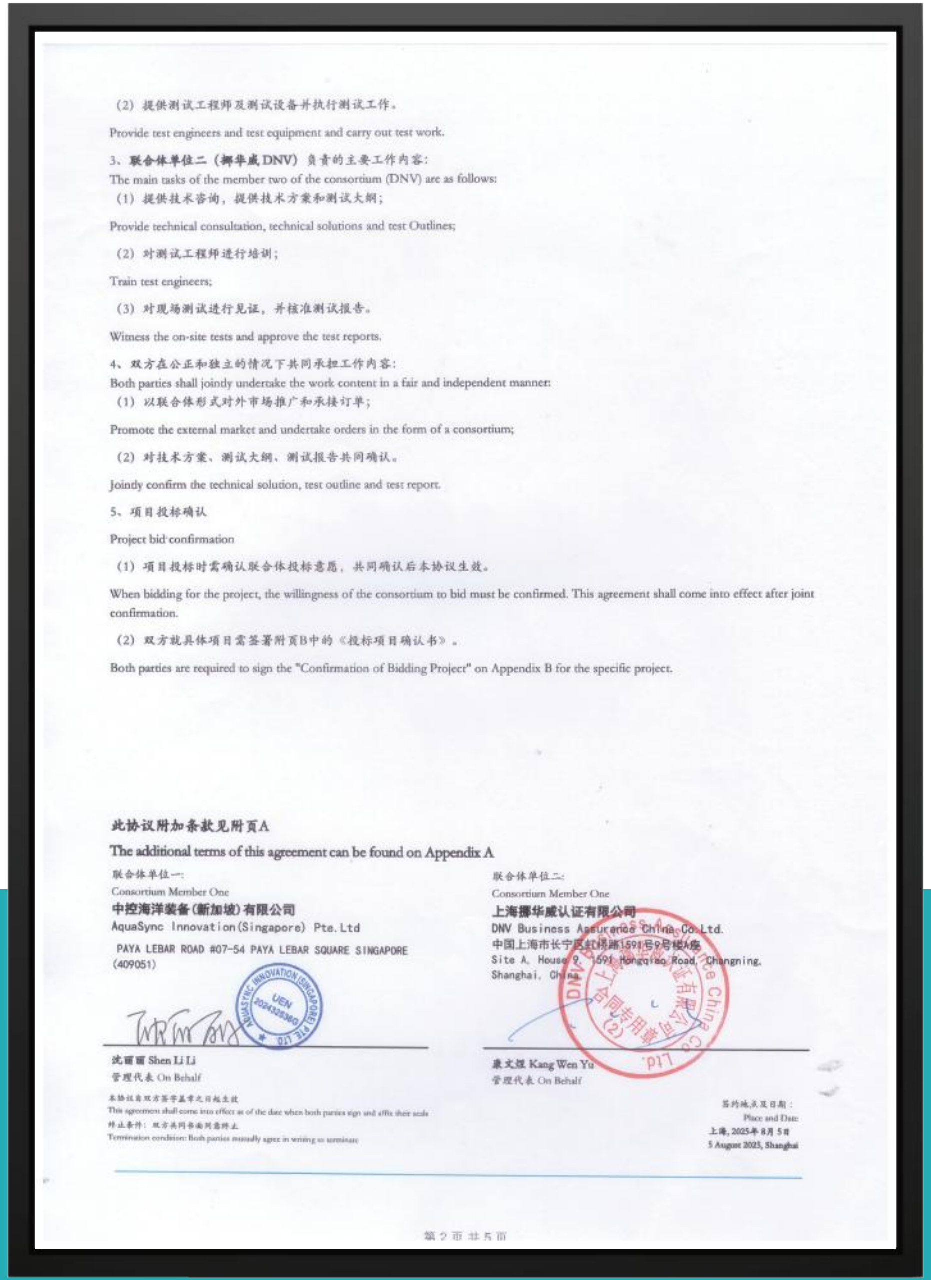
2、**联合体单位一（ASI）**负责的主要工作内容:

The main tasks of Consortium Member One (ASI) are as follows:

（1）客户市场推广;

Customer marketing promotion

第 1 页 共 5 页



（2）提供测试工程师及测试设备并执行测试工作。

Provide test engineers and test equipment and carry out test work.

3、**联合体单位二（挪华威 DNV）**负责的主要工作内容:
The main tasks of the member two of the consortium (DNV) are as follows:
（1）提供技术咨询，提供技术方案和测试大纲;

Provide technical consultation, technical solutions and test Outlines;

（2）对测试工程师进行培训;

Train test engineers;

（3）对现场测试进行见证，并核准测试报告。

Witness the on-site tests and approve the test reports.

4、双方在公正和独立的情况下共同承担工作内容:
Both parties shall jointly undertake the work content in a fair and independent manner:
（1）以联合体形式对外市场推广和承接订单;

Promote the external market and undertake orders in the form of a consortium;

（2）对技术方案、测试大纲、测试报告共同确认。

Jointly confirm the technical solution, test outline and test report.

5、项目投标确认

Project bid confirmation

（1）项目投标时需确认联合体投标意愿，共同确认后本协议生效。

When bidding for the project, the willingness of the consortium to bid must be confirmed. This agreement shall come into effect after joint confirmation.

（2）双方就具体项目需签署附页B中的《投标项目确认书》。

Both parties are required to sign the "Confirmation of Bidding Project" on Appendix B for the specific project.

此协议附加条款见附页A
The additional terms of this agreement can be found on Appendix A

联合体单位一:
Consortium Member One
中控海洋装备(新加坡)有限公司
AquaSync Innovation(Singapore) Pte.Ltd
PAYA LEBAR ROAD #07-54 PAYA LEBAR SQUARE SINGAPORE
(409051)

AQUASYNC INNOVATION (SINGAPORE) PTE LTD
UEN 202432536G

沈丽丽 Shen Li Li
管理代表 On Behalf

联合体单位二:
Consortium Member One
上海挪华威认证有限公司
DNV Business Assurance China Co.Ltd.
中国上海市长宁区虹桥路1591号9号楼A座
Site A, House 9, 1591 Hongqiao Road, Changning,
Shanghai, China

DNV Business Assurance China Co. Ltd.
上海挪华威认证有限公司
合同专用章
(2)

康文煜 Kang Wen Yu
管理代表 On Behalf

本协议自双方签字盖章之日起生效
This agreement shall come into effect as of the date when both parties sign and affix their seals
终止条件：双方共同书面同意终止
Termination condition: Both parties mutually agree in writing to terminate

签约地点及日期：
Place and Date:
上海, 2025年 8月 5日
5 August 2025, Shanghai

第 2 页 共 5 页

Corresponding Qualifications for Ship Cybersecurity E26

On April 02, 2024, DNV, a professional risk management service agency, has issued certificates of **ISO 9001:2015** quality management system, **ISO/IEC 27001:2022** Information security management system and **ISO/IEC 20000:2018** Information technology service management system to AguaSync Innovation.

DNV

GB/T 19001-2016/ISO 9001:2015

Quality Management System

DNV

ISO/IEC 27001:2022

Information Security, Cybersecurity and Privacy Protection Information Security Management Systems Requirements

DNV

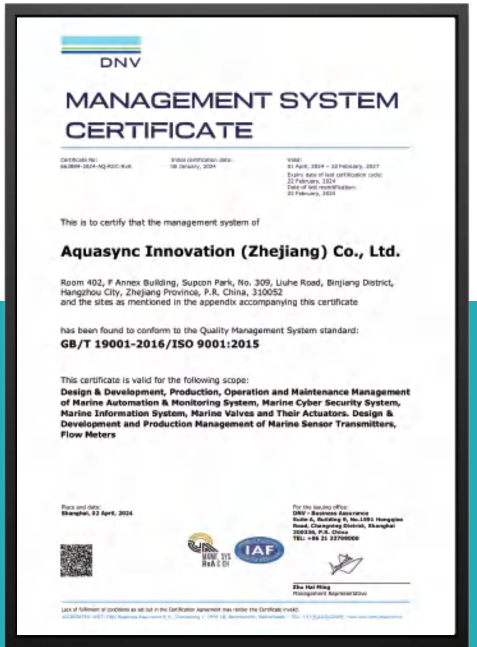
ISO/IEC 20000-1:2018

Information Technology-service Management
Part 1: Service Management System Requirements

DNV

IEC 62443 4-1 & 2-4

Security for Industrial Automation and Control Systems



DNV

MANAGEMENT SYSTEM CERTIFICATE

Certificate No.: 663894-2024-AQ-RGC-RvA
Initial certification date: 08 January, 2004
Valid: 01 April, 2024 – 22 February, 2027
Expiry date of last certification cycle: 22 February, 2024
Date of last recertification: 22 February, 2024

This is to certify that the management system of

Aquasync Innovation (Zhejiang) Co., Ltd.

Room 402, F Annex Building, Supcon Park, No. 309, Liuhe Road, Binjiang District, Hangzhou City, Zhejiang Province, P.R. China, 310052
and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Quality Management System standard:
GB/T 19001-2016/ISO 9001:2015

This certificate is valid for the following scope:
Design & Development, Production, Operation and Maintenance Management of Marine Automation & Monitoring System, Marine Cyber Security System, Marine Information System, Marine Valves and Their Actuators. Design & Development and Production Management of Marine Sensor Transmitters, Flow Meters

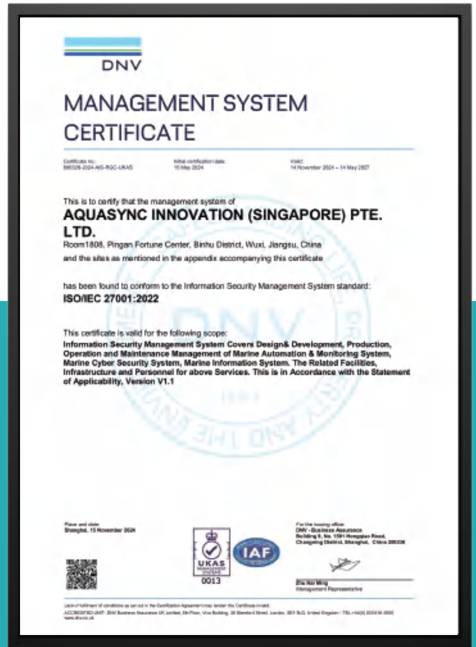
Place and date:
Shanghai, 02 April, 2024

For the issuing office:
DNV - Business Assurance
Suite A, Building 9, No.1591 Hongqiao Road, Changning District, Shanghai 200336, P.R. China
TEL: +86 21 32799000

Zhu Hai Ming
Management Representative

IAF

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV Business Assurance B.V., Zwolseweg 1, 2994 LB, Barendrecht, Netherlands - TEL: [illegible]



DNV

MANAGEMENT SYSTEM CERTIFICATE

Certificate no.: 690526-2024-AIS-RGC-UKAS
Initial certification date: 15 May 2024
Valid: 14 November 2024 – 14 May 2027

This is to certify that the management system of
AQUASYNC INNOVATION (SINGAPORE) PTE. LTD.
Room1808, Pingan Fortune Center, Binhu District, Wuxi, Jiangsu, China
and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Information Security Management System standard:
ISO/IEC 27001:2022

This certificate is valid for the following scope:
Information Security Management System Covers Design& Development, Production, Operation and Maintenance Management of Marine Automation & Monitoring System, Marine Cyber Security System, Marine Information System. The Related Facilities, Infrastructure and Personnel for above Services. This is in Accordance with the Statement of Applicability, Version V1.1

Place and date:
Shanghai, 15 November 2024

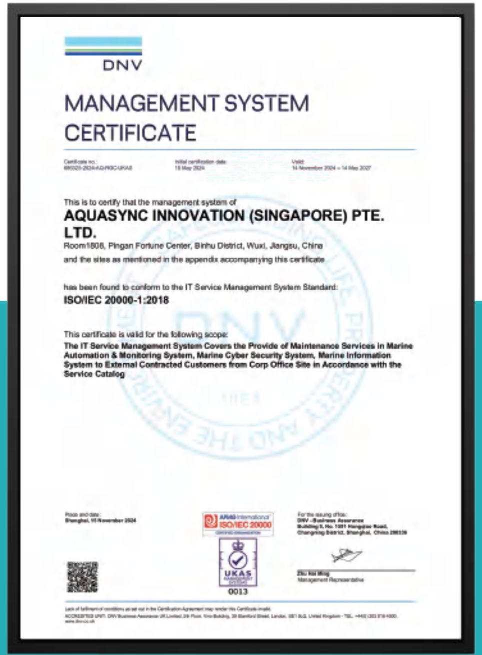
UKAS MANAGEMENT SYSTEMS 0013

IAF

For the issuing office:
DNV - Business Assurance
Building 9, No. 1591 Hongqiao Road, Changning District, Shanghai, China 200336

Zhu Hai Ming
Management Representative

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV Business Assurance UK Limited, 5th Floor, Vivo Building, 30 Stamford Street, London, SE1 9LQ, United Kingdom - TEL:+44(0) 203 816 4000. www.dnv.co.uk



DNV

MANAGEMENT SYSTEM CERTIFICATE

Certificate no.: 690525-2024-AQ-RGC-UKAS
Initial certification date: 15 May 2024
Valid: 14 November 2024 – 14 May 2027

This is to certify that the management system of
AQUASYNC INNOVATION (SINGAPORE) PTE. LTD.
Room1808, Pingan Fortune Center, Binhu District, Wuxi, Jiangsu, China
and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the IT Service Management System Standard:
ISO/IEC 20000-1:2018

This certificate is valid for the following scope:
The IT Service Management System Covers the Provide of Maintenance Services in Marine Automation & Monitoring System, Marine Cyber Security System, Marine Information System to External Contracted Customers from Corp Office Site in Accordance with the Service Catalog

Place and date:
Shanghai, 15 November 2024

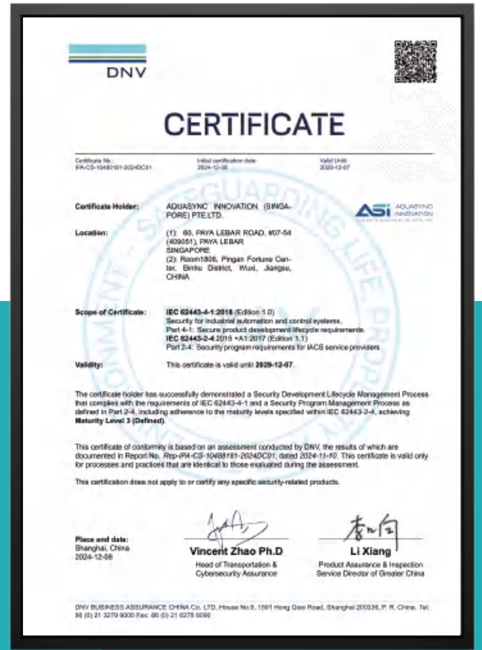
ANAB International ISO/IEC 20000 CERTIFIED ORGANIZATION

UKAS MANAGEMENT SYSTEMS 0013

For the issuing office:
DNV - Business Assurance
Building 9, No. 1591 Hongqiao Road, Changning District, Shanghai, China 200336

Zhu Hai Ming
Management Representative

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV Business Assurance UK Limited, 5th Floor, Vivo Building, 30 Stamford Street, London, SE1 9LQ, United Kingdom - TEL:+44(0) 203 816 4000. www.dnv.co.uk



DNV

CERTIFICATE

Certificate No.: IPA-CS-10488181-2024DC01
Initial certification date: 2024-12-08
Valid Until: 2029-12-07

Certificate Holder: AQUASYNC INNOVATION (SINGAPORE) PTE.LTD.

Location: (1): 60, PAYA LEBAR ROAD, #07-54 (409051), PAYA LEBAR SINGAPORE
(2): Room1808, Pingan Fortune Center, Binhu District, Wuxi, Jiangsu, CHINA

Scope of Certificate: **IEC 62443-4-1:2018** (Edition 1.0)
Security for industrial automation and control systems,
Part 4-1: Secure product development lifecycle requirements.
IEC 62443-2-4:2015 +A1:2017 (Edition 1.1)
Part 2-4: Security program requirements for IACS service providers

Validity: This certificate is valid until **2029-12-07**.

The certificate holder has successfully demonstrated a Security Development Lifecycle Management Process that complies with the requirements of IEC 62443-4-1 and a Security Program Management Process as defined in Part 2-4, including adherence to the maturity levels specified within IEC 62443-2-4, achieving **Maturity Level 3 (Defined)**.

This certificate of conformity is based on an assessment conducted by DNV, the results of which are documented in Report No. Rep-IPA-CS-10488181-2024DC01, dated 2024-11-10. This certificate is valid only for processes and practices that are identical to those evaluated during the assessment.

This certification does not apply to or certify any specific security-related products.

Place and date:
Shanghai, China
2024-12-08

Vincent Zhao Ph.D
Head of Transportation & Cybersecurity Assurance

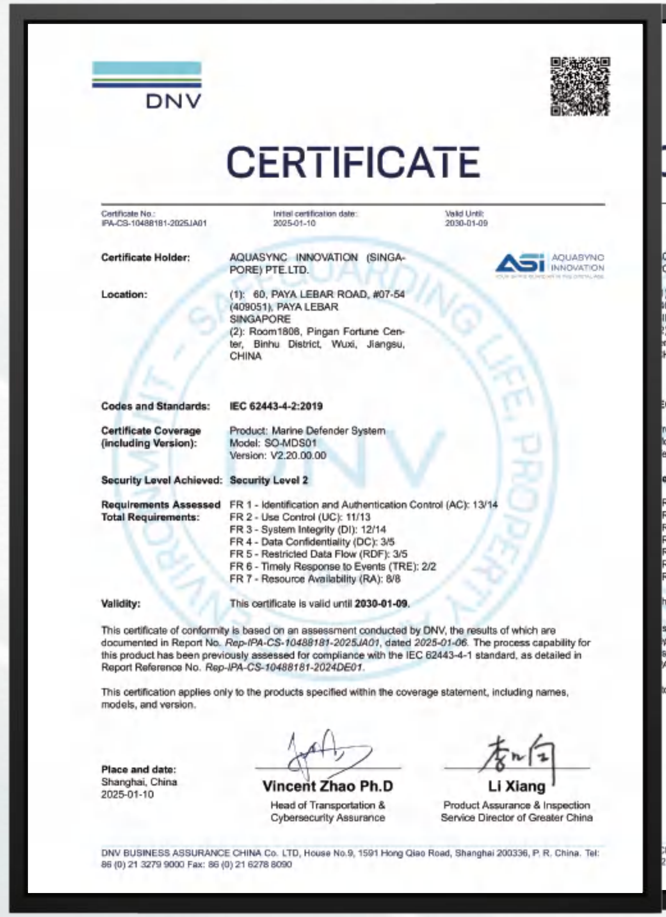
Li Xiang
Product Assurance & Inspection Service Director of Greater China

DNV BUSINESS ASSURANCE CHINA Co. LTD. House No.9, 1591 Hong Qiao Road, Shanghai 200336, P. R. China. Tel: 86 (0) 21 3279 9000 Fax: 86 (0) 21 6278 6090

IEC 62443 4-2

DNV

- Marine Defender System
- Network Security Detection System
- Marine Network Firewall
- Cybersecurity Management Platform



DNV

CERTIFICATE

Certificate No.: IPA-CS-10488181-2025JA01
Initial certification date: 2025-01-10
Valid Until: 2030-01-09

Certificate Holder: AQUASYNC INNOVATION (SINGAPORE) PTE.LTD.

ASI AQUASYNC INNOVATION

Location: (1): 60, PAYA LEBAR ROAD, #07-54 (409051), PAYA LEBAR SINGAPORE
(2): Room1808, Pingan Fortune Center, Binhu District, Wuxi, Jiangsu, CHINA

Codes and Standards: **IEC 62443-4-2:2019**

Certificate Coverage (including Version): Product: Marine Defender System
Model: SO-MDS01
Version: V2.20.00.00

Security Level Achieved: **Security Level 2**

Requirements Assessed Total Requirements:
FR 1 - Identification and Authentication Control (AC): 13/14
FR 2 - Use Control (UC): 11/13
FR 3 - System Integrity (DI): 12/14
FR 4 - Data Confidentiality (DC): 3/5
FR 5 - Restricted Data Flow (RDF): 3/5
FR 6 - Timely Response to Events (TRE): 2/2
FR 7 - Resource Availability (RA): 8/8

Validity: This certificate is valid until **2030-01-09.**

This certificate of conformity is based on an assessment conducted by DNV, the results of which are documented in Report No. *Rep-IPA-CS-10488181-2025JA01*, dated *2025-01-06*. The process capability for this product has been previously assessed for compliance with the IEC 62443-4-1 standard, as detailed in Report Reference No. *Rep-IPA-CS-10488181-2024DE01*.

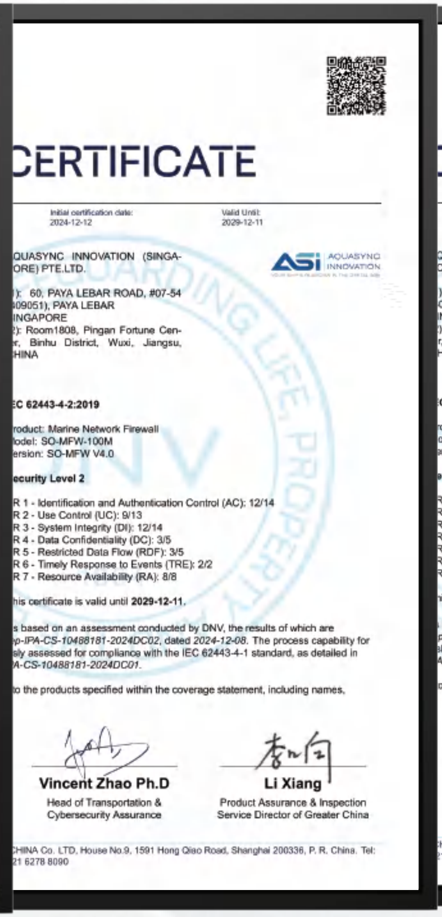
This certification applies only to the products specified within the coverage statement, including names, models, and version.

Place and date:
Shanghai, China
2025-01-10

Vincent Zhao Ph.D
Head of Transportation & Cybersecurity Assurance

Li Xiang
Product Assurance & Inspection Service Director of Greater China

DNV BUSINESS ASSURANCE CHINA Co. LTD, House No.9, 1591 Hong Qiao Road, Shanghai 200336, P. R. China. Tel: 86 (0) 21 3279 9000 Fax: 86 (0) 21 6278 8090



CERTIFICATE

Initial certification date: 2024-12-12
Valid Until: 2029-12-11

QUASYNC INNOVATION (SINGAORE) PTE.LTD.

ASI AQUASYNC INNOVATION

): 60, PAYA LEBAR ROAD, #07-54
09051), PAYA LEBAR
INGAPORE
): Room1808, Pingan Fortune Cen-
r, Binhu District, Wuxi, Jiangsu,
HINA

C 62443-4-2:2019

roduct: Marine Network Firewall
odel: SO-MFW-100M
ersion: SO-MFW V4.0

ecurity Level 2

R 1 - Identification and Authentication Control (AC): 12/14
R 2 - Use Control (UC): 9/13
R 3 - System Integrity (DI): 12/14
R 4 - Data Confidentiality (DC): 3/5
R 5 - Restricted Data Flow (RDF): 3/5
R 6 - Timely Response to Events (TRE): 2/2
R 7 - Resource Availability (RA): 8/8

his certificate is valid until **2029-12-11.**

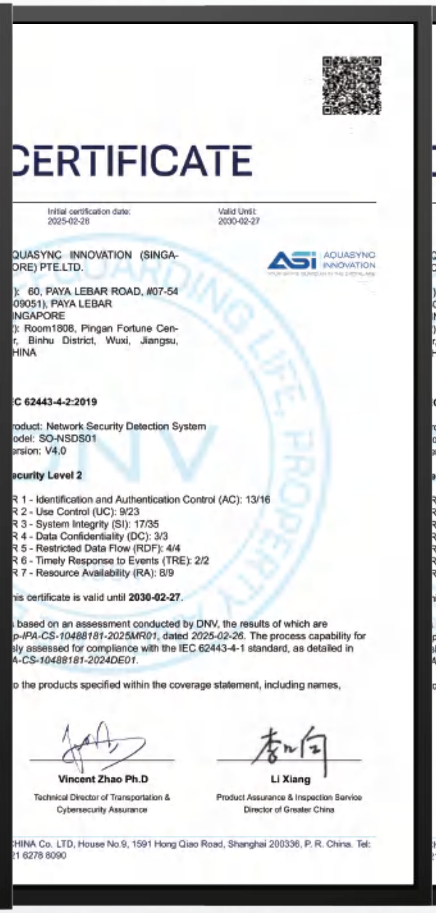
s based on an assessment conducted by DNV, the results of which are
p-IPA-CS-10488181-2024DC02*, dated *2024-12-08*. The process capability for
sly assessed for compliance with the IEC 62443-4-1 standard, as detailed in
A-CS-10488181-2024DC01*.

to the products specified within the coverage statement, including names,

Vincent Zhao Ph.D
Head of Transportation &
Cybersecurity Assurance

Li Xiang
Product Assurance & Inspection
Service Director of Greater China

HINA Co. LTD, House No.9, 1591 Hong Qiao Road, Shanghai 200336, P. R. China. Tel:
21 6278 8090



CERTIFICATE

Initial certification date: 2025-02-28
Valid Until: 2030-02-27

QUASYNC INNOVATION (SINGAORE) PTE.LTD.

ASI AQUASYNC INNOVATION

): 60, PAYA LEBAR ROAD, #07-54
09051), PAYA LEBAR
INGAPORE
): Room1808, Pingan Fortune Cen-
r, Binhu District, Wuxi, Jiangsu,
HINA

C 62443-4-2:2019

roduct: Network Security Detection System
odel: SO-NSDS01
ersion: V4.0

ecurity Level 2

R 1 - Identification and Authentication Control (AC): 13/16
R 2 - Use Control (UC): 9/23
R 3 - System Integrity (SI): 17/35
R 4 - Data Confidentiality (DC): 3/3
R 5 - Restricted Data Flow (RDF): 4/4
R 6 - Timely Response to Events (TRE): 2/2
R 7 - Resource Availability (RA): 8/9

his certificate is valid until **2030-02-27.**

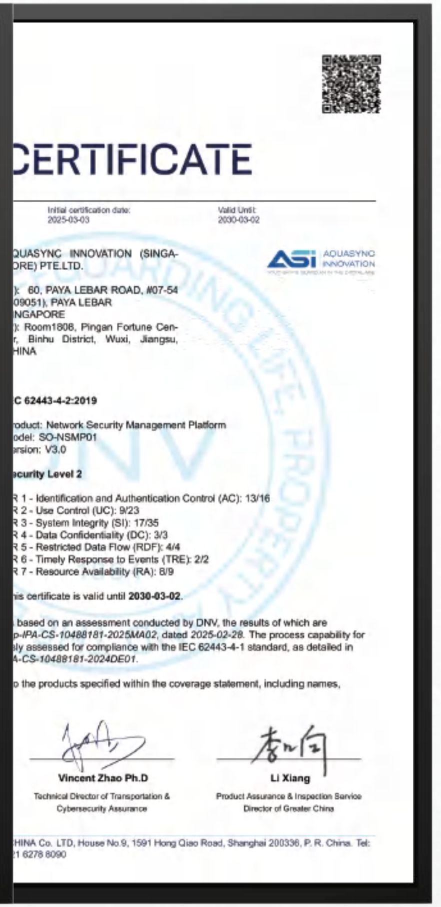
based on an assessment conducted by DNV, the results of which are
p-IPA-CS-10488181-2025MR01*, dated *2025-02-26*. The process capability for
sly assessed for compliance with the IEC 62443-4-1 standard, as detailed in
A-CS-10488181-2024DE01*.

the products specified within the coverage statement, including names,

Vincent Zhao Ph.D
Technical Director of Transportation &
Cybersecurity Assurance

Li Xiang
Product Assurance & Inspection Service
Director of Greater China

HINA Co. LTD, House No.9, 1591 Hong Qiao Road, Shanghai 200336, P. R. China. Tel:
1 6278 8090



CERTIFICATE

Initial certification date: 2025-03-03
Valid Until: 2030-03-02

QUASYNC INNOVATION (SINGAORE) PTE.LTD.

ASI AQUASYNC INNOVATION

): 60, PAYA LEBAR ROAD, #07-54
09051), PAYA LEBAR
NGAPORE
): Room1808, Pingan Fortune Cen-
r, Binhu District, Wuxi, Jiangsu,
HINA

C 62443-4-2:2019

roduct: Network Security Management Platform
odel: SO-NSMP01
rsion: V3.0

curity Level 2

R 1 - Identification and Authentication Control (AC): 13/16
R 2 - Use Control (UC): 9/23
R 3 - System Integrity (SI): 17/35
R 4 - Data Confidentiality (DC): 3/3
R 5 - Restricted Data Flow (RDF): 4/4
R 6 - Timely Response to Events (TRE): 2/2
R 7 - Resource Availability (RA): 8/9

is certificate is valid until **2030-03-02.**

based on an assessment conducted by DNV, the results of which are
p-IPA-CS-10488181-2025MA02*, dated *2025-02-28*. The process capability for
ly assessed for compliance with the IEC 62443-4-1 standard, as detailed in
A-CS-10488181-2024DE01*.

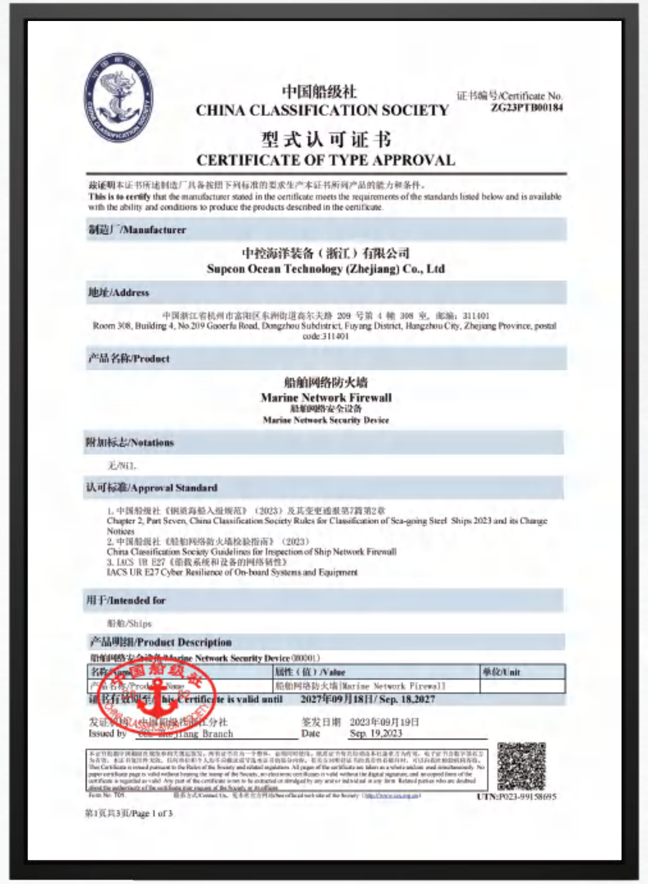
the products specified within the coverage statement, including names,

Vincent Zhao Ph.D
Technical Director of Transportation &
Cybersecurity Assurance

Li Xiang
Product Assurance & Inspection Service
Director of Greater China

HINA Co. LTD, House No.9, 1591 Hong Qiao Road, Shanghai 200336, P. R. China. Tel:
1 6278 8090

CCS Certification



中国船级社
CHINA CLASSIFICATION SOCIETY

证书编号/Certificate No.
ZG23PTB00184

型式认可证书
CERTIFICATE OF TYPE APPROVAL

兹证明本证书所述制造厂具备按照下列标准的要求生产本证书所列产品的能力和条件。
This is to certify that the manufacturer stated in the certificate meets the requirements of the standards listed below and is available with the ability and conditions to produce the products described in the certificate.

制造厂/Manufacturer

中控海洋装备（浙江）有限公司
Supcon Ocean Technology (Zhejiang) Co., Ltd

地址/Address

中国浙江省杭州市富阳区东洲街道高尔夫路 209 号第 4 幢 308 室，邮编：311401
Room 308, Building 4, No.209 Gaoerfu Road, Dongzhou Subdistrict, Fuyang District, Hangzhou City, Zhejiang Province, postal code:311401

产品名称/Product

船舶网络防火墙
Marine Network Firewall
船舶网络安全设备
Marine Network Security Device

附加标志/Notations

无/Nil.

认可标准/Approval Standard

1. 中国船级社《钢质海船入级规范》（2023）及其变更通报第7篇第2章
Chapter 2, Part Seven, China Classification Society Rules for Classification of Sea-going Steel Ships 2023 and its Change Notices
2. 中国船级社《船舶网络防火墙检验指南》（2023）
China Classification Society Guidelines for Inspection of Ship Network Firewall
3. IACS UR E27《船载系统和设备的网络韧性》
IACS UR E27 Cyber Resilience of On-board Systems and Equipment

用于/Intended for

船舶/Ships

产品明细/Product Description

船舶网络安全设备/Marine Network Security Device(00001)

名称/Name	属性（值）/Value	单位/Unit
产品名称/Product Name	船舶网络防火墙|Marine Network Firewall	

证书有效期至/This Certificate is valid until **2027年09月18日/ Sep. 18,2027**

发证机构 中国船级社浙江分社
Issued by CCS Zhejiang Branch

签发日期 2023年09月19日
Date Sep. 19,2023

中国船级社 CHINA CLASSIFICATION SOCIETY

[illegible]

Form No: T01 联系方式/Contact Us [illegible]

UTN:P023-99158695

第1页共3页/Page 1 of 3

The Marine Network Firewall we provide has obtained the first CCS Domestic Type Approval Certificate for Cybersecurity equipment.

Laboratory Certificate

Laboratory Capabilities

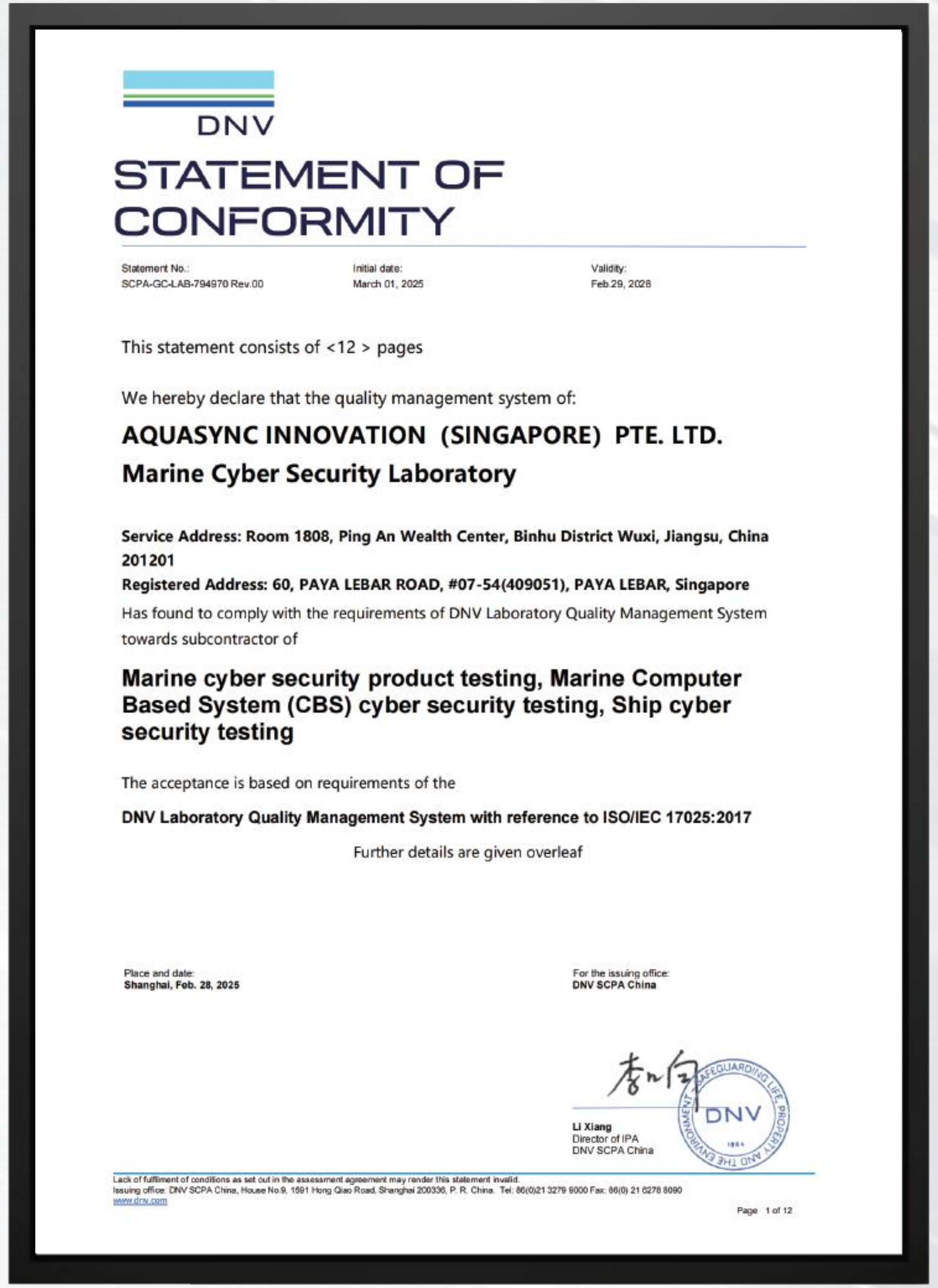
DNV ISO/IEC 17025 Certification

- Baseline Verification
- Vulnerability Scanning
- Penetration Testing
- E27 & E26 Compliance Testing

DNV

ISO/IEC 17025:2017

Marine Cybersecurity Product Testing, Marine Computer Based System(CBS) Cybersecurity Testing, Ship Cybersecurity Testing



DNV

STATEMENT OF CONFORMITY

Statement No.:	Initial date:	Validity:
SCPA-GC-LAB-794970 Rev.00	March 01, 2025	Feb.29, 2028

This statement consists of <12 > pages

We hereby declare that the quality management system of:

AQUASYNC INNOVATION (SINGAPORE) PTE. LTD.
Marine Cyber Security Laboratory

Service Address: Room 1808, Ping An Wealth Center, Binhu District Wuxi, Jiangsu, China 201201
Registered Address: 60, PAYA LEBAR ROAD, #07-54(409051), PAYA LEBAR, Singapore

Has found to comply with the requirements of DNV Laboratory Quality Management System towards subcontractor of

Marine cyber security product testing, Marine Computer Based System (CBS) cyber security testing, Ship cyber security testing

The acceptance is based on requirements of the

DNV Laboratory Quality Management System with reference to ISO/IEC 17025:2017

Further details are given overleaf

Place and date:
Shanghai, Feb. 28, 2025

For the issuing office:
DNV SCPA China

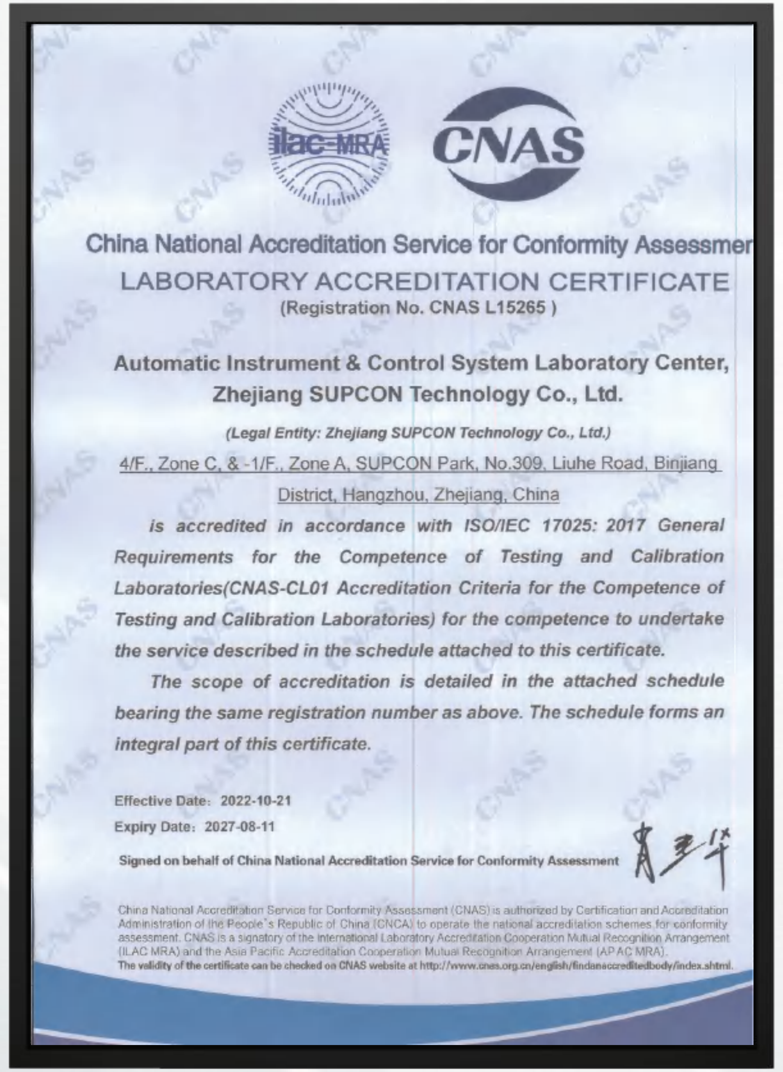
Li Xiang
Director of IPA
DNV SCPA China

SAFEGUARDING LIFE, PROPERTY AND THE ENVIRONMENT
DNV
1864

Lack of fulfilment of conditions as set out in the assessment agreement may render this statement invalid.
Issuing office: DNV SCPA China, House No.9, 1591 Hong Qiao Road, Shanghai 200336, P. R. China. Tel: 86(0)21 3279 9000 Fax: 86(0) 21 6278 8090
www.dnv.com

Page 1 of 12

China National Accreditation Service for Conformity Assessment Inspection body accreditation certificate —— DNV, SUPCON (ASI)



China National Accreditation Service for Conformity Assessmer

LABORATORY ACCREDITATION CERTIFICATE

(Registration No. CNAS L15265)

Automatic Instrument & Control System Laboratory Center, Zhejiang SUPCON Technology Co., Ltd.

(Legal Entity: Zhejiang SUPCON Technology Co., Ltd.)

4/F., Zone C, & -1/F., Zone A, SUPCON Park, No.309, Liuhe Road, Binjiang District, Hangzhou, Zhejiang, China

is accredited in accordance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence to undertake the service described in the schedule attached to this certificate.

The scope of accreditation is detailed in the attached schedule bearing the same registration number as above. The schedule forms an integral part of this certificate.

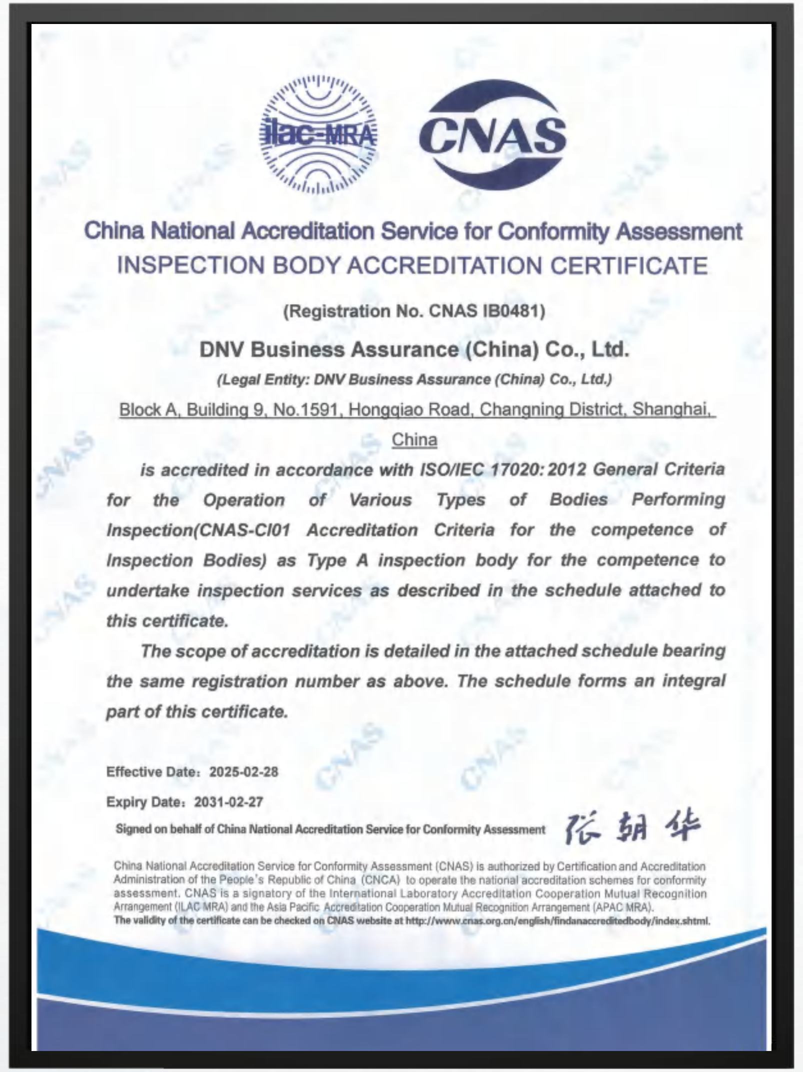
Effective Date：2022-10-21

Expiry Date：2027-08-11

Signed on behalf of China National Accreditation Service for Conformity Assessment

China National Accreditation Service for Conformity Assessment (CNAS) is authorized by Certification and Accreditation Administration of the People's Republic of China (CNCA) to operate the national accreditation schemes for conformity assessment. CNAS is a signatory of the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement (ILAC MRA) and the Asia Pacific Accreditation Cooperation Mutual Recognition Arrangement (APAC MRA).

The validity of the certificate can be checked on CNAS website at http://www.cnas.org.cn/english/findanaccreditedbody/index.shtml.



China National Accreditation Service for Conformity Assessment

INSPECTION BODY ACCREDITATION CERTIFICATE

(Registration No. CNAS IB0481)

DNV Business Assurance (China) Co., Ltd.

(Legal Entity: DNV Business Assurance (China) Co., Ltd.)

Block A, Building 9, No.1591, Hongqiao Road, Changning District, Shanghai, China

is accredited in accordance with ISO/IEC 17020: 2012 General Criteria for the Operation of Various Types of Bodies Performing Inspection(CNAS-CI01 Accreditation Criteria for the competence of Inspection Bodies) as Type A inspection body for the competence to undertake inspection services as described in the schedule attached to this certificate.

The scope of accreditation is detailed in the attached schedule bearing the same registration number as above. The schedule forms an integral part of this certificate.

Effective Date：2025-02-28

Expiry Date：2031-02-27

Signed on behalf of China National Accreditation Service for Conformity Assessment 张朝华

China National Accreditation Service for Conformity Assessment (CNAS) is authorized by Certification and Accreditation Administration of the People's Republic of China (CNCA) to operate the national accreditation schemes for conformity assessment. CNAS is a signatory of the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement (ILAC MRA) and the Asia Pacific Accreditation Cooperation Mutual Recognition Arrangement (APAC MRA).

The validity of the certificate can be checked on CNAS website at http://www.cnas.org.cn/english/findanaccreditedbody/index.shtml.

Our Service Capabilities - Personnel Qualifications

ISC2 International Information System Security Certification Consortium

The ISC2 Board of Directors hereby awards

Huaqing Zhou

the credential of

Certified Information Systems Security Professional

Having met all of the certification requirements, adoption of the ISC2 Code of Ethics, and successful performance on the required competency examination, subject to recertification every three years, this individual is entitled to all of the rights and privileges associated with this designation,as defined in the ISC2 Bylaws.

J Packer

James Packer - Chairperson

Guy Hermann Ngambeket Ndiandukue - Secretary

CISSP.

ANAB

1123709

Certification Number

Nov 1, 2025 - Oct 31, 2028

Certification Cycle

Certified Since: 2025

YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

Performance Report

05

Statistics on Ships Supported for Cybersecurity Certification – E26

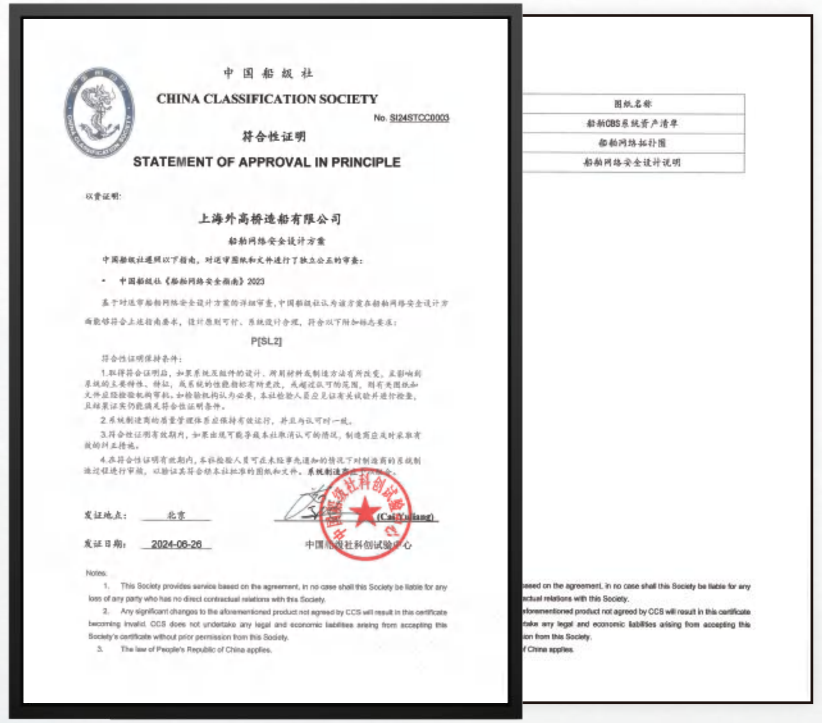
Statistical time:November 20, 2025

NO.	Ship Type	ABS	LR	CCS	DNV	BV	RINA	Total
1	Container	3	16	22	20	14	3	78
2	Oil Chemical Tanker	36	34	8	10	6	6	100
3	Platform Supply Vessel	7		5	3	5		20
4	Cable-Laying Vessel		1	1				2
5	AHT	14				2		16
6	Deck Carrier							5
7	Bulk Carrier	6	4	8	5	4	2	29
8	Refrigerated Transport Vesse							7
9	Offshore Operation Vessel	2			4	2		8
	Total	68	58	51	44	33	11	265

CSSC × AQUASYNC INNOVATION
YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

"Assisting SWS with Obtaining China's First CCS Ship Cybersecurity Principle Recognition (SL2 AIP) Certificate for 300,000-ton Ammonia Dual-Fuel VLCC"

On June 26, 2024, the 300,000-ton ammonia dual-fuel VLCC independently developed by SHANGHAI WAIGAOQIAO SHIPBUILDING CO.,LTD (SWS） received the Approval in Principle (AIP) certificate for ship cybersecurity from the CCS. This certification satisfies the IACS unified requirements for ship cyber resilience (UR E26) and meets the classification symbol requirements of CCS cybersecurity (P[SL2]). According to the CCS "Guidelines for Ship Cybersecurity," cybersecurity ratings range from SL0 to SL4, with five levels in total. Compared to the entry-level SL0, this project achieved SL2, which was determined by comprehensively balancing the ship's cybersecurity and implementation feasibility. This certification significantly enhances the ship's ability to defend against cyber-attacks and meets the high-security network demands driven by the digital, intelligent, and green transformation trends in the shipping industry.



中 国 船 级 社
CHINA CLASSIFICATION SOCIETY
No. SI24STCC0003
符合性证明
STATEMENT OF APPROVAL IN PRINCIPLE

兹证明:

上海外高桥造船有限公司
船舶网络安全设计方案

中国船级社遵照以下指南，对送审图纸和文件进行了独立公正的审查：

- 中国船级社《船舶网络安全指南》2023

基于对送审船舶网络安全设计方案的详细审查，中国船级社认为该方案在船舶网络安全设计方面能够符合上述指南要求，设计原则可行、系统设计合理，符合以下附加标志要求：

P[SL2]

符合性证明保持条件：

1.取得符合证明后，如果系统及组件的设计、所用材料或制造方法有所改变，且影响到系统的主要特性、特征，或系统的性能指标有所更改，或超过认可的范围，则有关图纸和文件应经检验机构审批，如检验机构认为必要，本社检验人员应见证有关试验并进行检查，且结果证实仍能满足符合性证明条件。

2.系统制造商的质量管理体系应保持有效运行，并且与认可时一致。

3.符合性证明有效期内，如果出现可能导致本社取消认可的情况，制造商应及时采取有效的纠正措施。

4.在符合性证明有效期内，本社检验人员可在未经事先通知的情况下对制造商的系统制造过程进行审核，以验证其符合经本社批准的图纸和文件。系统制造商[illegible]。

发证地点： 北京
发证日期： 2024-06-26

(Cai Yuliang)
中国船级社科创试验中心

Notes:
1. This Society provides service based on the agreement, in no case shall this Society be liable for any loss of any party who has no direct contractual relations with this Society.
2. Any significant changes to the aforementioned product not agreed by CCS will result in this certificate becoming invalid. CCS does not undertake any legal and economic liabilities arising from accepting this Society's certificate without prior permission from this Society.
3. The law of People's Republic of China applies.

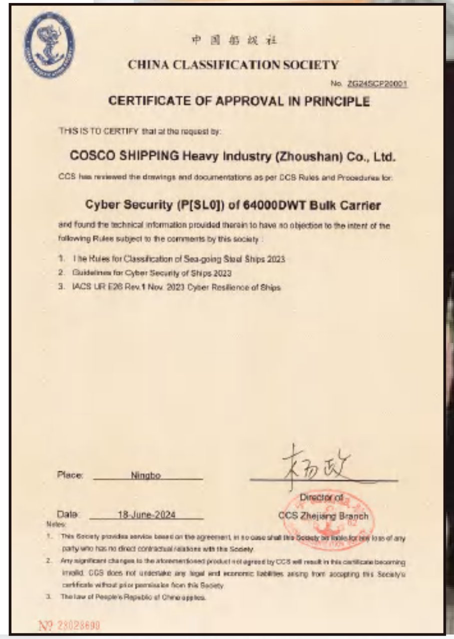
图纸名称
船舶CBS系统资产清单
船舶网络拓扑图
船舶网络安全设计说明

ased on the agreement, in no case shall this Society be liable for any
actual relations with this Society.
aforementioned product not agreed by CCS will result in this certificate
take any legal and economic liabilities arising from accepting this
ion from this Society.
f China applies.

COSCO SHIPPING × AQUASYNC INNOVATION
YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

"Assisting COSCO with Achieving CCS Cybersecurity Level SL0 AIP Recognition"

On June 18, 2024, CHINA CLASSIFICATION SOCIETY (CCS) AWARDED COSCO SHIPPING HEAVY INDUSTRY CO., LTD. (referred to as COSCO) the first-ever cybersecurity principle recognition certificate for their 64,000 DWT bulk carrier. This certification marks the first time CCS has issued a principle recognition certificate for ship cybersecurity on an actual vessel. The recognition meets the requirements of both IACS UR E26 and CCS "Guidelines for Ship Cybersecurity," providing a reasonable and feasible solution for this type of bulk carrier to comply with IACS UR E26 standards.



中 国 船 级 社
CHINA CLASSIFICATION SOCIETY
No. ZG24SCP20001
CERTIFICATE OF APPROVAL IN PRINCIPLE

THIS IS TO CERTIFY that at the request by:

COSCO SHIPPING Heavy Industry (Zhoushan) Co., Ltd.

CCS has reviewed the drawings and documentations as per CCS Rules and Procedures for:

Cyber Security (P[SL0]) of 64000DWT Bulk Carrier

and found the technical information provided therein to have no objection to the intent of the following Rules subject to the comments by this society :

1. The Rules for Classification of Sea-going Steel Ships 2023
2. Guidelines for Cyber Security of Ships 2023
3. IACS UR E26 Rev.1 Nov. 2023 Cyber Resilience of Ships

Place: Ningbo
Date: 18-June-2024

杨政
Director of
CCS Zhejiang Branch

Notes:
1. This Society provides service based on the agreement, in no case shall this Society be liable for any loss of any party who has no direct contractual relations with this Society.
2. Any significant changes to the aforementioned product not agreed by CCS will result in this certificate becoming invalid. CCS does not undertake any legal and economic liabilities arising from accepting this Society's certificate without prior permission from this Society.
3. The law of People's Republic of China applies.

№ 23023690

Testing Services for A Total of 20 Vessels Were Actually Delivered

Lloyd's Register

16
Vessels

HULL NOS.: NTS 0311544/ 0311545 115K DWT DOUBLE HULL OIL TANKER
HULL NOS.: NTS 0311548/0311549/0311556 115K DWT DOUBLE HULL OIL TANKER
HULL NOS.: H1401 114K DWT PRODUCT/CRUDE OIL TANKER
HULL NOS.: 0315879/0315880/0315881 156K DWT CRUDE OIL TANKER
HULL Nos.: NTS 0315869/0315870/0315871/0315872/0315873/0315874 OIL TANKER
HULL Nos.: H1422 114000DWT Cybersecurity Services

ABS

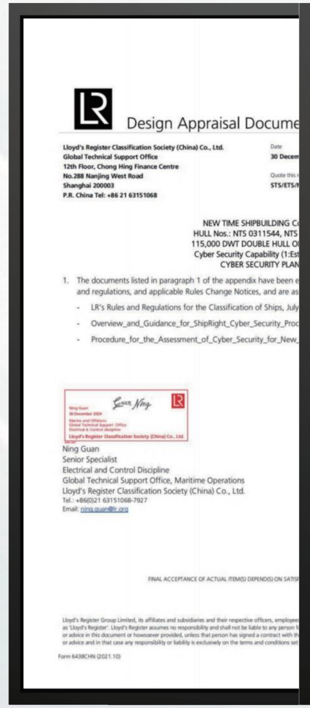
4
Vessels

HullNo.:0330001/0330002 299500DWT CRUDE OIL TANKER
HullNo.:H1594/H1595 114K DWT POT-ABS Cybersecurity Technology Supply and Services

BUREAU VERITAS

1
Vessels

Hul No.:0307373 PETROKARAVO



Design Appraisal Docume

Lloyd's Register Classification Society (China) Co., Ltd.
Global Technical Support Office
12th Floor, Chong Hing Finance Centre
No.288 Nanjing West Road
Shanghai 200003
P.R. China Tel: +86 21 63151068

Date
30 Decem

Quote this
STS/ETS/N

NEW TIME SHIPBUILDING C
HULL Nos.: NTS 0311544, NTS
115,000 DWT DOUBLE HULL O
Cyber Security Capability (1:Est
CYBER SECURITY PLAN

1. The documents listed in paragraph 1 of the appendix have been e and regulations, and applicable Rules Change Notices, and are as
   - LR's Rules and Regulations for the Classification of Ships, July
   - Overview_and_Guidance_for_ShipRight_Cyber_Security_Proc
   - Procedure_for_the_Assessment_of_Cyber_Security_for_New_

Guan Ning
Ning Guan
30 December 2024
Marine and Offshore
Global Technical Support Office
Electrical & Control discipline
Lloyd's Register Classification Society (China) Co., Ltd.

Ning Guan
Senior Specialist
Electrical and Control Discipline
Global Technical Support Office, Maritime Operations
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Tel.: +86(0)21 63151068-7927
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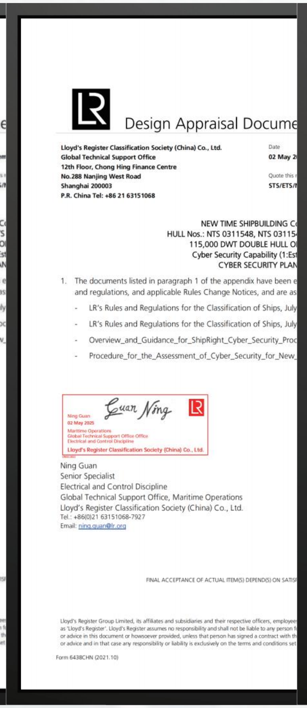

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Global Technical Support Office
12th Floor, Chong Hing Finance Centre
No.288 Nanjing West Road
Shanghai 200003
P.R. China Tel: +86 21 63151068

Date
02 May 2

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STS/ETS/N

NEW TIME SHIPBUILDING C
HULL Nos.: NTS 0311548, NTS 03115
115,000 DWT DOUBLE HULL O
Cyber Security Capability (1:Est
CYBER SECURITY PLAN

1. The documents listed in paragraph 1 of the appendix have been e and regulations, and applicable Rules Change Notices, and are as
   - LR's Rules and Regulations for the Classification of Ships, July
   - LR's Rules and Regulations for the Classification of Ships, July
   - Overview_and_Guidance_for_ShipRight_Cyber_Security_Proc
   - Procedure_for_the_Assessment_of_Cyber_Security_for_New_

Guan Ning
Ning Guan
02 May 2025
Maritime Operations
Global Technical Support Office Office
Electrical and Control Discipline
Lloyd's Register Classification Society (China) Co., Ltd.

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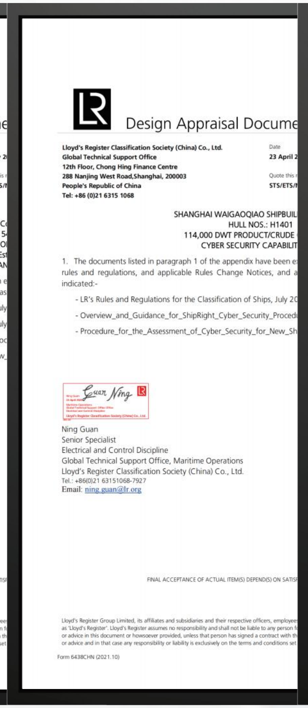

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People's Republic of China
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Date
23 April 2

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SHANGHAI WAIGAOQIAO SHIPBUIL
HULL NOS.: H1401
114,000 DWT PRODUCT/CRUDE
CYBER SECURITY CAPABILIT

1. The documents listed in paragraph 1 of the appendix have been e rules and regulations, and applicable Rules Change Notices, and a indicated:-
   - LR's Rules and Regulations for the Classification of Ships, July 20
   - Overview_and_Guidance_for_ShipRight_Cyber_Security_Proced
   - Procedure_for_the_Assessment_of_Cyber_Security_for_New_Sh

Guan Ning

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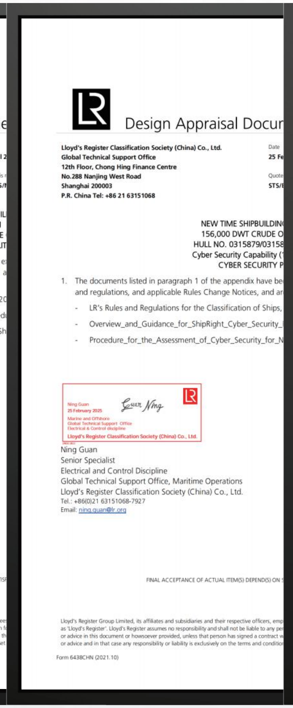

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P.R. China Tel: +86 21 63151068

Date
25 Fe

Quote
STS/E

NEW TIME SHIPBUILDIN
156,000 DWT CRUDE O
HULL NO. 0315879/03158
Cyber Security Capability (
CYBER SECURITY P

1. The documents listed in paragraph 1 of the appendix have be and regulations, and applicable Rules Change Notices, and ar
   - LR's Rules and Regulations for the Classification of Ships,
   - Overview_and_Guidance_for_ShipRight_Cyber_Security_
   - Procedure_for_the_Assessment_of_Cyber_Security_for_N

Guan Ning
Ning Guan
25 February 2025
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Electrical & Control discipline
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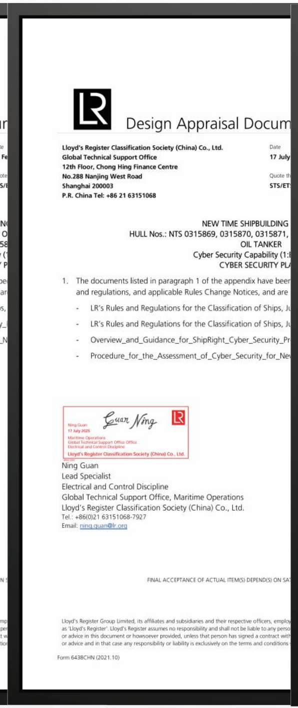

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Global Technical Support Office
12th Floor, Chong Hing Finance Centre
No.288 Nanjing West Road
Shanghai 200003
P.R. China Tel: +86 21 63151068

Date
17 July

Quote th
STS/ET

NEW TIME SHIPBUILDING
HULL Nos.: NTS 0315869, 0315870, 0315871,
OIL TANKER
Cyber Security Capability (1:
CYBER SECURITY PLA

1. The documents listed in paragraph 1 of the appendix have been and regulations, and applicable Rules Change Notices, and are
   - LR's Rules and Regulations for the Classification of Ships, Ju
   - LR's Rules and Regulations for the Classification of Ships, Ju
   - Overview_and_Guidance_for_ShipRight_Cyber_Security_Pr
   - Procedure_for_the_Assessment_of_Cyber_Security_for_Ne

Guan Ning
Ning Guan
17 July 2025
Maritime Operations
Global Technical Support Office Office
Electrical and Control Discipline
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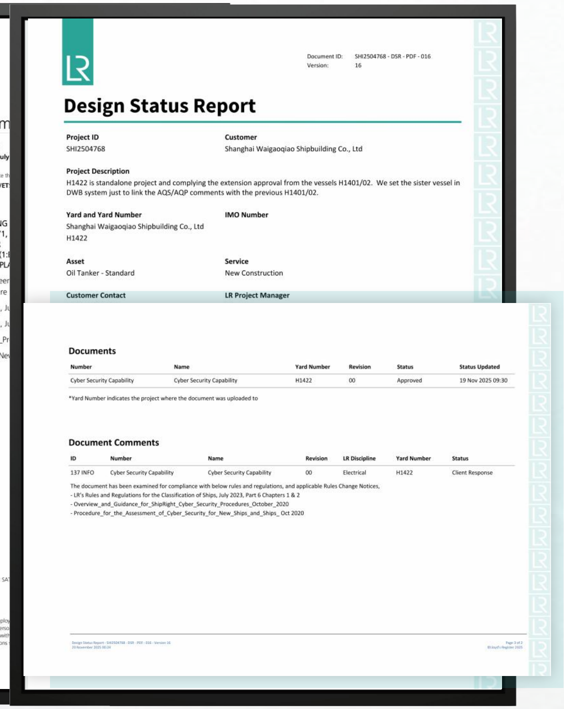

Document ID: SHI2504768 - DSR - PDF - 016
Version: 16

Design Status Report

Project ID
SHI2504768

Customer
Shanghai Waigaoqiao Shipbuilding Co., Ltd

Project Description
H1422 is standalone project and complying the extension approval from the vessels H1401/02. We set the sister vessel in DWB system just to link the AQS/AQP comments with the previous H1401/02.

Yard and Yard Number
Shanghai Waigaoqiao Shipbuilding Co., Ltd
H1422

IMO Number

Asset
Oil Tanker - Standard

Service
New Construction

Customer Contact

LR Project Manager

Documents

Number	Name	Yard Number	Revision	Status	Status Updated
Cyber Security Capability	Cyber Security Capability	H1422	00	Approved	19 Nov 2025 09:30

*Yard Number indicates the project where the document was uploaded to

Document Comments

ID	Number	Name	Revision	LR Discipline	Yard Number	Status
137 INFO	Cyber Security Capability	Cyber Security Capability	00	Electrical	H1422	Client Response

The document has been examined for compliance with below rules and regulations, and applicable Rules Change Notices,
- LR's Rules and Regulations for the Classification of Ships, July 2023, Part 6 Chapters 1 & 2
- Overview_and_Guidance_for_ShipRight_Cyber_Security_Procedures_October_2020
- Procedure_for_the_Assessment_of_Cyber_Security_for_New_Ships_and_Ships_ Oct 2020

Design Status Report - SHI2504768 - DSR - PDF - 016 - Version 16
20 November 2025 00:24

Page 3 of 2
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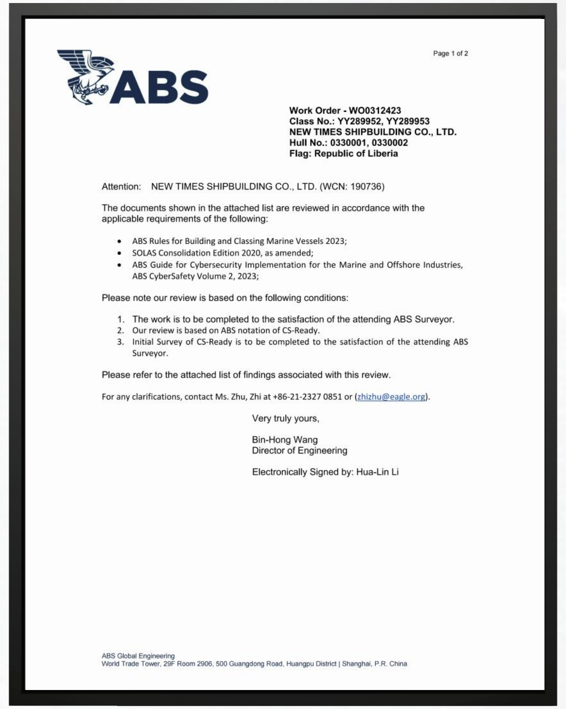


Page 1 of 2

Work Order - WO0312423
Class No.: YY289952, YY289953
NEW TIMES SHIPBUILDING CO., LTD.
Hull No.: 0330001, 0330002
Flag: Republic of Liberia

Attention: NEW TIMES SHIPBUILDING CO., LTD. (WCN: 190736)

The documents shown in the attached list are reviewed in accordance with the applicable requirements of the following:

- ABS Rules for Building and Classing Marine Vessels 2023;
- SOLAS Consolidation Edition 2020, as amended;
- ABS Guide for Cybersecurity Implementation for the Marine and Offshore Industries, ABS CyberSafety Volume 2, 2023;

Please note our review is based on the following conditions:

1. The work is to be completed to the satisfaction of the attending ABS Surveyor.
2. Our review is based on ABS notation of CS-Ready.
3. Initial Survey of CS-Ready is to be completed to the satisfaction of the attending ABS Surveyor.

Please refer to the attached list of findings associated with this review.

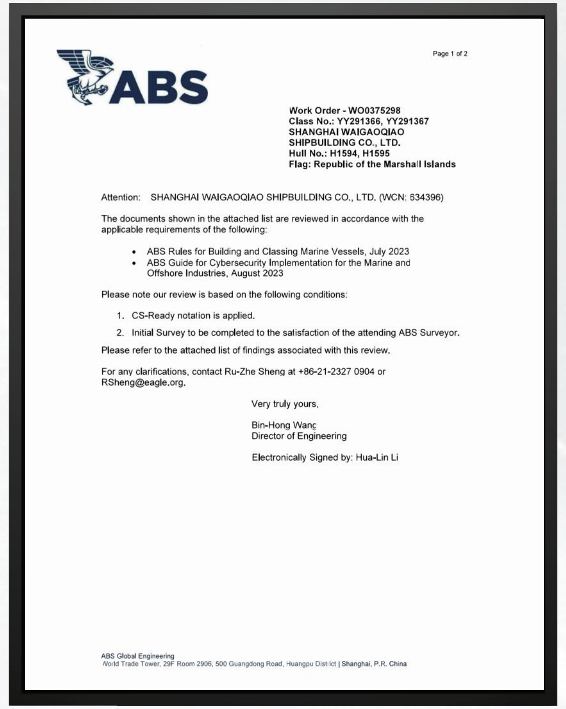
For any clarifications, contact Ms. Zhu, Zhi at +86-21-2327 0851 or (zhizhu@eagle.org).

Very truly yours,

Bin-Hong Wang
Director of Engineering

Electronically Signed by: Hua-Lin Li

ABS Global Engineering
World Trade Tower, 29F Room 2906, 500 Guangdong Road, Huangpu District | Shanghai, P.R. China



Page 1 of 2

Work Order - WO0375298
Class No.: YY291366, YY291367
SHANGHAI WAIGAOQIAO SHIPBUILDING CO., LTD.
Hull No.: H1594, H1595
Flag: Republic of the Marshall Islands

Attention: SHANGHAI WAIGAOQIAO SHIPBUILDING CO., LTD. (WCN: 634396)

The documents shown in the attached list are reviewed in accordance with the applicable requirements of the following:

- ABS Rules for Building and Classing Marine Vessels, July 2023
- ABS Guide for Cybersecurity Implementation for the Marine and Offshore Industries, August 2023

Please note our review is based on the following conditions:

1. CS-Ready notation is applied.
2. Initial Survey to be completed to the satisfaction of the attending ABS Surveyor.

Please refer to the attached list of findings associated with this review.

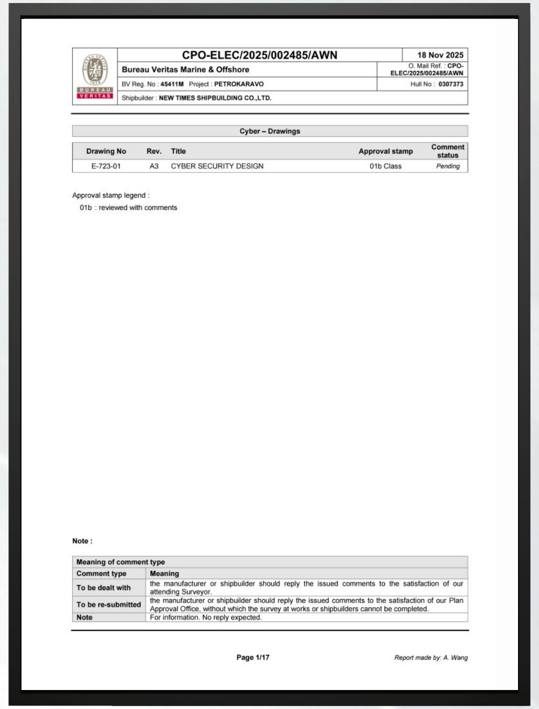
For any clarifications, contact Ru-Zhe Sheng at +86-21-2327 0904 or RSheng@eagle.org.

Very truly yours,

Bin-Hong Wang
Director of Engineering

Electronically Signed by: Hua-Lin Li

ABS Global Engineering
World Trade Tower, 29F Room 2906, 500 Guangdong Road, Huangpu District | Shanghai, P.R. China



BUREAU VERITAS	**CPO-ELEC/2025/002485/AWN**	**18 Nov 2025**
	Bureau Veritas Marine & Offshore	O. Mail Ref. : **CPO-ELEC/2025/002485/AWN**
	BV Reg. No : **45411M** Project : **PETROKARAVO**	Hull No : **0307373**
	Shipbuilder : **NEW TIMES SHIPBUILDING CO.,LTD.**	

Cyber – Drawings

Drawing No	Rev.	Title	Approval stamp	Comment status
E-723-01	A3	CYBER SECURITY DESIGN	01b Class	*Pending*

Approval stamp legend :
01b : reviewed with comments

Note :

Meaning of comment type	
Comment type	**Meaning**
To be dealt with	the manufacturer or shipbuilder should reply the issued comments to the satisfaction of our attending Surveyor.
To be re-submitted	the manufacturer or shipbuilder should reply the issued comments to the satisfaction of our Plan Approval Office, without which the survey at works or shipbuilders cannot be completed.
Note	For information. No reply expected.

Page 1/17

Report made by: A. Wang