中国船级社
CHINA CLASSIFICATION SOCIETY

证书编号/Certificate No.
JS25PTB00276_02

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

江苏海兰船舶电气系统科技有限公司
Jiangsu Highland Integration Technology Co., Ltd.

地址/Address

江苏省南通市苏通科技产业园清枫路199号
No.199, Qingfeng Road, Sutong Science Park, Nantong City, Jiangsu

产品名称/Product

船用雷达
Marine Radar

附加标志/Notations

无/Nil.

认可标准/Approval Standard

1. 国际海事组织大会决议A.694(17)《作为全球海上遇险和安全系统（遇险和安全系统）组成部分的船载无线电设备和电子助航设备的一般要求》
IMO Resolution A.694(17) General Requirements for Shipborne Radio Equipment Forming Part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids
2. 中华人民共和国海事局《国内航行海船法定检验技术规则》（2020）及其修改通报 第4篇第5章附录3
Annex 3,Chapter 5,Part Four of China MSA Regulation for Statutory Survey of Ships and Offshore Installations-Regulation for Statutory Survey of Sea-Going Ships Engaged in Domestic Voyages(2020)and its Amendments.
3. 中华人民共和国海事局《内河船舶法定检验技术规则》(2019)及其修改通报 第5篇第6章
Chapter 6, Part Five of China MSA Regulation for Statutory Survey of Ships and Offshore Installations-Regulation for Statutory Survey of Ships Engaged in Inland Voyages (2019) and its Amendments
4. 国际海事组织海安会决议 MSC.466(101) 关于船载航行显示器有关航行信息显示的性能标准》(MSC.191(79))的修正案
IMO Resolution MSC.466(101) Amendment of MSC.191(79) Performance Standards for the Presentation of Navigation Related Information on Shipborne Navigational Displays.
5. 国际海事组织海安会决议MSC.191(79)《船载航行显示器有关航行信息显示的性能标准》
IMO Resolution MSC.191(79) Performance Standards for the Presentation of Navigation-Related Information on Shipborne Navigational Displays
6. 国际海事组织海安会决议MSC.192(79) 《经修订的〈关于雷达设备性能标准的建议案〉》
IMO Resolution MSC.192(79) Adoption of the Revised Performance Standards for Radar Equipment
7. 国际海事组织大会决议Res.A.278(VIII)《航海雷达设备控制符号》

证书有效期至/This Certificate is valid until	**2027年09月21日/ Sep. 21,2027**
发证机构 中国船级社江苏分社 Issued by CCS Jiangsu Branch	签发日期 2025年07月28日 Date Jul. 28,2025

IMO Res.A.278(VIII) Control Symbol of Navigation Radar Equipment
8. 国际电讯联盟建议书ITU-R M.1177-4(04/2011) 《对于雷达系统无用发射的测量技术》
ITU-R M.1177-4(04/2011) Techniques for Measurement of Unwanted Emissions of Radar Systems
9. IEC 62388:2013/COR1:2014 Edition 2.0 (2014-02-12)《导航和无线电设备-船用雷达-性能要求、测试方法和要求的测试结果》
IEC 62388:2013/COR1:2014 Edition 2.0 (2014-02-12) Maritime navigation and radiocommunication equipment and systems - Shipborne radar - Performance requirements, methods of testing and required test results
10. IEC 60945:2002/COR1:2008《船用航行和无线电通信设备及系统-通用要求-试验方法和试验结果的要求》
IEC60945:2002/COR1:2008 Maritime Navigation and Radiocommunication Equipment and Systems – General Requirements – Methods of testing and Required Test Results
11. 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)
12. 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

用于/Intended for

X波段船用雷达（收发单元型号HLD-TU220）拟用于内河航行船舶。The X band Marine radar (transceiver unit model HLD-TU220) is to be used for inland waters ship.X波段船用雷达（收发单元型号HLD-TU230）、S波段船用雷达（收发单元型号HLD-TU225）拟用于国际和国内航行海船。The X band Marine radar (transceiver unit model HLD-TU230), The S band Marine radar (transceiver unit model HLD-TU225) are to be used for International sea-going and sea-going ships.雷达显示单元型号为HLD-DU112，HLD-DU135, HLD-DU141,HLD-DU164适用于国际和国内航行海船；雷达显示单元型号为HLD-DU138,HLD-DU165适用于国际航行海船及小于10000总吨的国内航行海船；雷达显示单元型号为HLD-DU122,HLD-DU134，HLD-DU140，HLD-DU133，HLDDU142,HLD-DU162,HLD-DU163适用小于10000总吨的国际和国内航行海船；雷达显示单元型号为HLD-DU121,HLD-DU160,HLD-DU161适用于小于500总吨的国际和国内航行海船。The types of radar display unit 为HLD-DU112，HLD-DU135， HLD-DU141,HLD-DU164 are used for international sea-going and sea-going ships .The types of radar display unit HLD-DU138,HLD-DU165 are used for international sea-going ships and sea-going ships（less than 10000 gross tonnage）The types of radar display unit HLD-DU122,HLD-DU134，HLD-DU140，HLD-DU133，HLDDU142,HLD-DU162,HLD-DU163 are used for international sea-going and sea-going ships less than 10000 gross tonnage .The types of radar display unit HLD-DU121,HLD-DU160,HLD-DU161 are used for international sea-going sea-going ships less than 500 gross tonnage .

产品明细/Product Description

雷达设备/Radar Equipment(M0001)

名称/Name	**属性（值）/Value**	**单位/Unit**
型号/Type	HLD-RADAR 900S/900SH	
系统组成/System Component	详见附页|See additional page	

批准的图纸/Approved Drawings

图纸批准号/ Drawings Approval No.: NP12A00441, NP14A03458, NP15A02948, NP17A01627, NP19PPP03987, NP20PPP00893, NP20PPP02570, NP20PPP02570_1，NP23PPP05406，NP24PPP04984

产品认可试验报告/ Approval Test Report

试验报告编号/ Test Report No.： HLD_10100DG 202310
试验报告日期/ Test Report Date： 2023-09-07

试验报告编号/ Test Report No.： HLD1800XS-202107
试验报告日期/ Test Report Date： 2021-07-08

试验报告编号/ Test Report No.： Ship Test EM2015-031
试验报告日期/ Test Report Date： 2015-07-29

试验报告编号/ Test Report No.： 23TAS06P20D32-80100
试验报告日期/ Test Report Date： 2024-01-31

试验报告编号/ Test Report No.： 202402023
试验报告日期/ Test Report Date： 2024-03-07

试验报告编号/ Test Report No.： HLD_10100CB2_20240222
试验报告日期/ Test Report Date： 2024-02-22

试验报告编号/ Test Report No.： HLD_10100CB2_20240301
试验报告日期/ Test Report Date： 2024-03-01

试验报告编号/ Test Report No.： J24-007-WT
试验报告日期/ Test Report Date： 2024-03-15

试验报告编号/ Test Report No.： HLD-RADAR900S-202104HS
试验报告日期/ Test Report Date： 2021-04-21

试验报告编号/ Test Report No.： Ship Test 2015-031
试验报告日期/ Test Report Date： 2015-09-25

试验报告编号/ Test Report No.： SP02-2015005
试验报告日期/ Test Report Date： 2015-10-30

试验报告编号/ Test Report No.： JECZ S202011002/JECZ S202011003
试验报告日期/ Test Report Date： 2021-01-18

试验报告编号/ Test Report No.： A16-026-WT
试验报告日期/ Test Report Date： 2017-01-16

试验报告编号/ Test Report No.： SI25PTCCV014
试验报告日期/ Test Report Date： 2025-05-06

认可后的产品检验方式/ Method of Product Inspection after Approval

按规范认可后应进行产品检验的产品/The product should be inspected in term of the rules：
认可后的产品检验应由本社验船师根据本社规范规定按批准的产品检验计划进行检验，经检验合格后由本社颁发船用产品证书。
After approval, product inspection should be carried out by the Surveyor of the Society in accordance with the approved product inspection scheme, and the Marine Product Certificate will be issued by the Society upon satisfactory inspection.

认可保持条件/ Maintenance Requirements of Approval

1.型式认可后，如果产品及其重要零部件的设计、所用材料或制造方法有所改变，且影响到产品的主要特性、特征；或产品的性能指标有所更改，且超过认可的范围，则有关图纸和文件应经检验机构审批。并在检验机构认为必要时，经本社检验人员见证有关试验和进行检查，其结果应能证实仍符合认可条件。
After type approval, if there are changes to the design, materials used or manufacturing method of the product and important components and such changes affect major characteristics and properties of the product, or property indexes of the product are changed and exceed the scope of approval, related drawings and documents are to be examined and approved by the concerned survey office. Where deemed necessary by the survey office, the surveyor to the Society will go to witness relevant tests and conduct inspection and the results should be able to demonstrate compliance with the approval conditions.
2.工厂的质量管理体系应保持有效运行，并且与认可时一致。如果质量管理体系发生改变，应经原体系认证机构审核并报本社批准。
The quality management system of the factory shall be ensure effective operation, and shall be the same as the situation of approval. If there are any changes to the quality management system, auditing of the original certification organization for quality management system and the society's approval shall be obtained.
3.认可证书有效期内，如果出现可能导致本社取消认可的情况，工厂应及时采取有效的纠正措施。
Within the validity of the approval certificate, if cases occur that may cause the Society to withdraw the approval, the manufacturer should take corrective actions in a prompt and effective manner.
4.在认可证书有效期内，本社检验人员可在未经事先通知的情况下对工厂的产品制造过程进行审核，以验证产品的生产是否符合业经本社批准的图纸和文件。工厂应予以配合。
Within the validity of the approval certificate, the surveyor to the Society may pay unannounced audit to the manufacturing process of the product in order to confirm whether it is in compliance with the drawings and documents approved by the Society. The factory should provide an active cooperation and necessary for the surveyor.

备注/Remarks

1.本社已审核了产品厂无石棉声明，但本社的审核不免除产品厂按照合同关系向订货方保证产品无石棉的责任。
The declaration of asbestos-free submitted by manufacturer has been reviewed by the Society.

However, liability of the manufacturer to guarantee the products are asbestos-free to purchaser under contract will not be exempted.

2.本证书由原型式认可证书（No. JS24PTB00043）变更并替代原证书。

This Certificate is modified from and supersedes the previous Type Approval Certificate No.JS24PTB00043.

3.根据 IEC 62388-2013中表1的说明，雷达的最小显示区域不作为标准要求予以考虑。同时，IMO MSC.191(79)决议第1 条"目的"中已明确，如在显示器性能标准上与其他标准（如：MSC192（79））产生矛盾时，应以本标准为准。

According to IEC 62388-2013 Table 1, the minimum display area isn't considered as a requirement for radar. Meanwhile, if a conflict occured on display performance standard, this MSC resolution shall take priority over other standards (eg.MSC.192（79）), as stated in PURPOSE of item1 of MSC. 191 (79).

4.网络安全等级：SL0。

Cyber Security Class：SL0

5..本产品支持不直接与不可信网络连接，不支持无线访问管理和无线使用控制。

This product does not supports direct connection to untrusted networks and does not support wireless access management and wireless control.

6.公司应记录软件的所有变更。软件的重大变更应通知本社，并提交相关文件进行评估。如果评估认定该变更会影

响到规范中要求的功能，应重新进行相关型式试验，并进行型式认可的相关变更。

All changes in software are to be recorded by the manufacturer.Significant software changes should be notified to the China Classification Society and relevant documents should be submitted for assessment. If the assessment confirms that the change will affect the function required in the rules, relevant type test should be carried out again, and type approval need to be modified.

7.结合具体项目申请本社检验时，以下文件应提交批准：CBS资产清单、网络系统拓扑图、配置核查报告。

The following documentation of the specific base individual application is to be submitted for approval in each case: CBS asset inventory ;Topology diagrams ;Test report for configuration of security capabilities.

8.制造厂应确保产品的开发遵循安全开发生命周期中各阶段的网络安全要求，编制相应的程序和安全更新文件应持续有效，并符合本社《船舶网络安全指南》及IACS UR E27要求。

The manufacturer shall ensure that the development of products meets the cyber security requirements at each stage of Secure Development Lifecycle, and develop corresponding procedures and security update documents that are continuously effective and comply with CCS "Guidelines for Ship Cyber Security" and IACS UR E27 requirements.

中国船级社江苏分社

CCS Jiangsu Branch

注：本证书含有附页，共4页

Note: The certificate is attached with additional 4 page(s)

附页：

产品明细/Product Description

1.产品型号/Type	HLD-RADAR 900S/900SH		
2.系统组成/System Components	主控单元/显示单元/人机交互单元/收发单元/天线单元/电源转换单元 Main Unit/Display Unit/Human Interface Unit/Transceiver Unit/Antenna Unit /Power Conversion Unit		
3.额定电压/Rated Voltage	AC110V/220V/380V		
4.峰值功率/Peak of output power	X-band solid-state: 200W	S-band solid-state: 250W	X-band solid-state: 300W
5.天线长度/Length of Antenna	4ft.or 6ft. or 8ft.	12ft.	4ft.or 6ft. or 8ft.
6.软件版本号/Software Version	2.X		
7.工作频率/Frequency	9300±100MHz	3000±100MHz	9300±100MHz
8.最小操作显示区直径/Minimum operation display area diameter	15 inch：188mm or 17 inch：220mm or 19 inch：251mm or 23 inch：325mm or 24 inch：275mm or 26 inch：323mm or 27 inch：321mm		
9.最小显示区域/Minimum display area	340*228mm or 336*269mm or 376*301mm or 470*353mm or 531*298mm or 550*343mm or 597*336mm		
10.是否具有自动捕获目标功能/AUTO acquisition of targets function	是/yes		
11.最少被捕获的雷达目标数/Minimum acquired radar targets capacity	100		
12.最少被激活的AIS目标数/Minimum acquired AIS targets capacity	250		
13.最少休眠AIS目标数/Minimum sleeping AIS targets capacity	999（可配置/Configurable）		
14.是否具有试操船功能/Whether includes trial manoeuvre function	是/yes		
15.罗经安全距离/Compass safety distance	主控单元：140cm 显示单元：190cm 天线与标准罗经：130cm 天线与操舵罗经：155cm X波段收发单元与天线（200w and 4ft. or 6ft. or 8ft.）:330cm X波段收发单元与天线（300w and 4ft. or 6ft. or 8ft.）:360cm S波段收发单元与天线（250w and 12ft.）:410cm Main Unit：140cm Display Unit：190cm Between Antenna and Standard compass：130cm		

<table>
<tr><td></td><td colspan="5">Between Antenna and Steering compass：155cm
X-Band transceiver & Antenna（200w and 4ft.or 6ft.or 8ft.）:330cm
X-Band transceiver & Antenna（300w and 4ft.or 6ft.or 8ft.）:360cm
S-Band transceiver & Antenna（250w and 12ft.）:410cm</td></tr>
<tr><td>16.性能监视器型号/Performance Monitor type</td><td colspan="2">HLD_PM25</td><td colspan="2">HLD_PM24</td><td>HLD_PM25</td></tr>
<tr><td>17.是否集成电子标绘（EPA）功能/Whether Electric Plotting Aid function be integrated into the radar equipment</td><td colspan="2">是/yes</td><td colspan="2">是/yes</td><td>是/yes</td></tr>
<tr><td>18.是否集成自动目标跟踪（ATA）功能/Whether Automatic Tracking Aid function be integrated into the radar equipment</td><td colspan="2">是/yes</td><td colspan="2">是/yes</td><td>是/yes</td></tr>
<tr><td>19.是否集成自动雷达标绘（ARPA）功能/Whether Automation Radar Plotting Aid function be integrated into the radar equipment</td><td colspan="2">是/yes</td><td colspan="2">是/yes</td><td>是/yes</td></tr>
<tr><td>20.天线型号/Type of Antenna</td><td colspan="2">HLD-AT104(4ft.) or HLD-AT106(6ft.) or HLD-AT108(8ft.)</td><td colspan="2">HLD-AT112(12ft.)</td><td>HLD-AT104(4ft.) or HLD-AT106(6ft.) or HLD-AT108(8ft.)</td></tr>
<tr><td>21.收发单元型号/Type of Transceiver</td><td colspan="2">HLD-TU220(200W)</td><td colspan="2">HLD-TU225(250W)</td><td>HLD-TU230(300W)</td></tr>
<tr><td rowspan="5">22.显示单元/Display Unit</td><td>型号/Type</td><td>显示区域/Display Area（mm）</td><td>操作直径/Operation Diameter（mm）</td><td>显示分辨率/Display Resolution（pixel）</td><td>适用范围/Application Scope</td></tr>
<tr><td>HLD-DU112</td><td>470×353</td><td>325</td><td>1600×1200</td><td>CAT 1/CAT 2/CAT 3/CAT 1C/CAT2C/CAT 3C</td></tr>
<tr><td>HLD-DU121</td><td>336×269</td><td>220</td><td>1280×1024</td><td>CAT 3/CAT 3C</td></tr>
<tr><td>HLD-DU122</td><td>376×301</td><td>251</td><td>1280×1024</td><td>CAT 2/CAT 2C/CAT3/CAT 3C</td></tr>
<tr><td>HLD-DU133</td><td>376×301</td><td>251</td><td>1280×1024</td><td>CAT 2/CAT 2C/CAT3/CAT 3C</td></tr>
</table>

	HLD-DU134	531×298	275	1920×1080	CAT 2/CAT 2C/CAT 3/CAT 3C
	HLD-DU135	550×343	323	1920×1200	CAT 1/CAT 2/CAT 3/CAT 1C/CAT 2C/CAT 3C
	HLD-DU138	597×336	321	1920×1080	CAT 1/CAT 2/CAT 3/CAT 1C/CAT 2C/CAT 3C
	HLD-DU140	531×298	275	1920×1080	CAT 2/CAT 2C/CAT 3/CAT 3C
	HLD-DU141	550×343	323	1920×1200	CAT 1/CAT 2/CAT 3/CAT 1C/CAT 2C/CAT 3C
	HLD-DU142	376×301	251	1280×1024	CAT 2/CAT 2C/CAT 3/CAT 3C
	HLD-DU160	304×228	188	1024×768	CAT 3/CAT 3C
	HLD-DU161	336×269	220	1280×1024	CAT 3/CAT 3C
	HLD-DU162	376×301	251	1280×1024	CAT 2/CAT 2C/CAT3/CAT 3C
	HLD-DU163	531×298	275	1920×1080	CAT 2/CAT 2C/CAT 3/CAT 3C
	HLD-DU164	550×343	323	1920×1080	CAT 1/CAT 2/CAT 3/CAT 1C/CAT 2C/CAT 3C

	HLD-DU165	597×336	321	1920×1080	CAT 1/CAT 2/CAT 3/CAT 1C/CAT 2C/CAT 3C
23.主控单元型号/Type of Main Unit	HLD-MCU200 or HLD-MCU600 or HLD-MCU750 or HLD-MCU770				
24.人机交互单元型号/Type of Human Interface Unit	HLD-IU600				
25.电源转换单元型号/Type of Power Conversion Unit	HLD-PCU600				
26.距离精度/Range accuracy	30m 或量程 1%/30m or 1% Range				
27.方位精度/Bearing accuracy	优于 1° /Better than 1°				
28.距离分辨率/Range discrimination	优于 25m/Better than 25m				
29.方位分辨率/Bearing discrimination	4ft 2.0° /6ft 1.3° /8ft 1.0° /12ft 2.3°				
30.量程/Range scales	0.125/0.25/0.5/0.75/1.5/2/3/6/12/24/48/96 nm				