

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Security/ Surveillance Camera

with type designation(s)

Marine Grade Anti-Corrosion Camera System Cameras

Issued to

Xi An Kaidun Intelligent Technology Co., Ltd.
Xi'an, Shaanxi, China

is found to comply with

DNV rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Type	Temperature	Humidity	Vibration	EMC	Enclosure
Cameras	D	B	A	B	D
CCTV RACK SYSTEM	A	A	A	B	A

Note: Type Identification and designation see Page 2

Issued at **Hamburg** on **2023-04-12**

This Certificate is valid until **2028-04-11**.

for **DNV**

DNV local unit: **Wuhan NB & CMC**

Approval Engineer: **Didier Girardin**

Joannis Papanuskas
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description ¹⁾

Marine Grade Anti-Corrosion Camera system

The marine grade anti-corrosion camera system consists of anti-corrosion cameras and CCTV Rack
the CCTV Rack consists of NVR, PoE Switch, as well as the Sub-PC

CCTV Rack System

KDRACK

NVR	➤ 16/32-Channel Input ➤ 4 SATA HDDs, Up To 10TB For Each HDD, ➤ Recording Resolution 12MP/8MP/6MP/5MP/4MP/3MP/1080p/960p/720p/D1/2CIF/CIF, Decoding Format Ultra 265, H.265, H.264
Sub-PC	➤ CPU Onboard Core i5-6360U Processors ➤ RAM 8GB or 16GB, ➤ SSD 256GB ➤ Operating system Windows10/Windows 11/Linux
PoE Switch	➤ 24 Gigabit PoE Ports Managed Ethernet Switch, which provides 24* Gigabit PoE Downlink Ports, 4* Gigabit SFP Uplink Ports. ➤ The switch complies with IEEE 802.3 af/at (PoE+) ➤ The total PoE power budget can be up to 390W which is adequate to power supply for HD IP cameras, Support single port 30W max, Power change and port output priority. ➤ Provides web-based layer 2 network management and PoE management by simple operation ²⁾

CAMERA SYSTEMS

KDM-EX-FL***IR01	➤ Marine Grade Anti-Corrosion Fixed IR Camera, Stainless Steel 316L Enclosure with Powder Coating ➤ IP68 Ingress Protection ➤ Optional Resolution and lens: 2MP ,4MP ,5MP ,8MP / 2.8mm ,3.6mm ,6mm etc.
KDM-EX-FL***IR03	➤ Marine Grade Anti-Corrosion Mini IR Fixed Camera, Stainless Steel 316L Enclosure with Powder Coating ➤ IP68 Ingress Protection ➤ Optional Resolution and Lens:2MP ,4MP ,5MP ,8MP / 2.8mm, 3.6mm, 6mm etc.
KDW-EX-VL***IRW02	➤ Marine Grade Anti-Corrosion Zoom IR Camera With Wiper, Wiper is optional, Stainless Steel 316L Enclosure with Powder Coating ➤ IP68 Ingress Protection ➤ Optional Resolution / Lens: 2MP ,4MP,5MP,8MP / Optical zoom 4x ,10x ,20x etc..
KDQ-EX-PTZ****IR04	➤ Marine Grade Anti-Corrosion PTZ Dome IR Camera, Stainless Steel 316L Enclosure with Powder Coating ➤ IP68 Ingress Protection ➤ Optional Resolution and Lens: 2MP ,4MP etc. / Optical zoom 5x ,12X etc..
KDY-EX-PTZ****IRW02	➤ Marine Grade Anti-Corrosion PTZ IR Camera, With Wiper, Stainless Steel 316L Enclosure with Polishing ➤ IP68 Ingress Protection ➤ Optional Resolution and lens: 2MP ,3MP ,4MP ,5MP ,8MP etc. / Optical Zoom Lens 20x ,30x ,44x etc.
Remark	Stainless cameras can be with powder coating or without powder coating, cameras with powder coating advise for outdoor application, cameras without powder coating advise for indoor application, KDY-EX-PTZ****IRW02 with polishing can be used for both indoor and outdoor.

¹⁾ See ANNEX for Component details covered by present certificate

²⁾ Software, managed switch software not covered by present certificate

Application/Limitation

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case.

Present certificate covers all product characteristics and types specified in the Annex, except for WiFi devices and functionalities which are explicitly excluded.

Product certificate

If specified in the applicable DNV Rule set, the system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. The test shall be done according to an approved test program. After certification the clause for software control will be put into force.

Software control

All changes in software are to be recorded as long as the system is in use on board. Documentation of major changes is to be forwarded to DNV for evaluation and approval before implemented on board. Certification of modified functionality may be required for the particular vessel.

Approval conditions

The following documentation of the actual application is to be submitted for approval in each case:

- Reference to this Type Approval Certificate
- Software version of implemented application
- System block diagram
- Power supply arrangement (may be part of the System block diagram)
- Single line diagram for IS-circuits (if applicable)
- Drawing showing location of equipment

To be assessed

- Type approved monitor shall be used and suitability of HMI and display features
- System failure alarm routing to an external system
- Equipment shall be mounted outside 5m surrounding area of the magnetic compass

Type Approval documentation

See Annex

Tests carried out

Applicable tests according to DNV-CG-0339, August 2021

Marking of product

- manufacturer name
- Model Name / type
- Serial Number
- Input Voltage, Power
- Enclosure IP grade
- Safe distance to compass

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component, and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE



Job Id: **262.1-038260-1**
Certificate No: **TAA000039C**

ANNEX

Type Approval documentation

Hidden on published version

Component details

Hidden on published version