



CERTIFICATE NUMBER	21-2192204-PDA
EFFECTIVE DATE	31-Dec-2021
EXPIRY DATE	30-Dec-2026
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

### **KONGSBERG MARITIME AS**

located at

**POSTBOKS 483, KONGSBERG, Norway, NO-3601**

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:** **Dynamic Positioning Control System, Position Mooring System ...**

**Model:** **K-Pos DP/PM/DPM and cJoy**

**Endorsements:**

**Tier:** **5 - Unit Certification Required**

This Product Design Assessment (PDA) Certificate remains valid until 30/Dec/2026 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

*mohammed abbas*

Mohammed K.M. Abbas, 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 (2010)

## KONGSBERG MARITIME AS

POSTBOKS 483

KONGSBERG

Norway NO-3601

Telephone: +47 33 03 24 07

Fax:

Email: km.support@km.kongsberg.com

Web: www.km.kongsberg.com

---

### Tier: 5 - Unit Certification Required

---

**Product:** Dynamic Positioning Control System, Position Mooring System and Independent Joystick Control System

**Model:** K-Pos DP/PM/DPM and cJoy

**Endorsements:**

**Intended Service:**

ABS Classed Vessels and Offshore Facilities in accordance with the listed ABS Rules.

**Description:**

Dynamic positioning control system, position mooring control system and independent joystick control system for vessels and offshore units.

DP operational modes: Joystick, Joystick High-Speed, Auto Heading, Auto Position, Mixed Joystick/Auto, Follow Target, Auto Track, Track Line, Seismic Track, Dredge and Modes related to Offshore Loading.

PM operational modes: Joystick, Mixed Joystick/Auto, Anchor Handling, Position Mooring.

DP system is composed:

-K-Pos OS: Operator Station.

-K-Pos DP controller: control cabinet composed of Main processor - RCU602, I/O bus - RHUB200-5, I/O units - RMP201-8, Serial lines - RSER200-4.

-cJoy DP Operator Terminal MK3: remote joystick with automatic heading and position capability for DP operation.

-cWing Terminal: remote joystick with automatic heading capability

-K-Master as alternative OS/Workstation.

Available configurations:

DP-11: Single stand alone DP control system composed of one DP controller unit (DPC-1) and one K-Pos OS, single network communication. Direct interface to the thrusters and includes the necessary interfaces to power plant, position-reference systems and sensors.

DP-12: Integrated single DP control system composed of one DP controller unit (DPC-1) and one K-Pos OS, double network communication. DP system can be integrated with the KONGSBERG K-Thrust and K-Chief systems.

DP-21: Stand-alone dual-redundant DP control system composed dual-redundant DP controller unit (DPC-2) and two identical K-Pos OS, dual high speed data network communication. Direct interface to the thrusters and includes the necessary interfaces to power plant, position-reference systems and sensors.

DP-22: Integrated dual-redundant DP control system composed of dual-redundant DP controller unit (DPC-2) and two identical K-Pos OS, dual high speed data network communication. DP system can be integrated with the KONGSBERG K-Thrust and K-Chief systems.

DP-31: Stand-alone triple-redundant DP control system composed of triple-redundant DP controller unit (DPC-3) and three identical K-Pos OS, dual high speed data network communication. Direct interface to the thrusters and includes the necessary interfaces to power plant, position-reference systems and sensors.

DP-32: Integrated triple-redundant DP control system composed of triple-redundant DP controller unit (DPC-3) and three identical K-Pos OS, dual high speed data network communication. DP system can be integrated with the KONGSBERG K-Thrust and K-Chief systems.

**Rating:**

Power supply: 115 / 230 VAC (+10%, -15%), (DP controller (cC-1, DPC-1, DPC-2, DPC-3) - 24 VDC version available for cC-1)

Enclosure protection: Cabinet - IP 22, cWing - IP56, DP Controller - IP44

Operating temperature: -15 Deg. C to 55 Deg. C, cWing -25 to 70 Deg. C

**Service Restriction:**

1) Unit Certification is required for this product.

2) If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the

## KONGSBERG MARITIME AS

POSTBOKS 483

KONGSBERG

Norway NO-3601

Telephone: +47 33 03 24 07

Fax:

Email: km.support@km.kongsberg.com

Web: www.km.kongsberg.com

### Tier: 5 - Unit Certification Required

---

specification or standard, including inspection standards and tolerances, must be clearly defined.

3) Dynamic Positioning control system is categorized as computer based system of Category II or III depending on the project. Documentation stated in 4-9-1/7.3.9 of 2021 MVR must be submitted accordingly to ABS for every project.

4) Documentation as stated in 4-9-3/Table 2 of 2021 MVR must be presented accordingly of the assigned system category.

5) Test and evidence as indicated in 4-9-3/Table 3 of 2021 MVR must be followed accordingly of the assigned system category.

6) Documentation stated on subsection 1/7.7 of ABS Guide for Dynamic Positioning Systems October 2021 must be submitted according to the requested DPS notation.

#### Comments:

1) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

2) This assessment is valid to KM's hardware only.

3) The cWing Mk3 test report is to be evaluated and considered OK by ABS before acceptance.

#### Notes/Drawing/Documentation:

Drawing No. 352676, Moxa Switch EDS-316 Hardware Module Description, Revision: D, Pages: -

Drawing No. 423726, K-Master FWD Bridge Workstation MK2 Built-in Maintenance Manual, Revision: D, Pages: -

Drawing No. 444002, Panel system K-Pos, KM18/KM05/BI, Connection Drawing, Revision: C, Pages: -

Drawing No. 450169, Power distribution (El. mech) Maintenance Manual, Revision: D, Pages: -

Drawing No. 450173, Display 24"/27"/32"/55" ECDIS Maintenance Manual, Revision: C, Pages: -

Drawing No. 462729, K-Master Server Cabinet Mk2 MNT, Revision: B, Pages: -

Drawing No. 463521, El-mech, 650 Operator Station KM05 DeepLine/Built-In, Connection Drawing, Revision: C, Pages: -

Drawing No. 300966, K-Pos Serial Lines, Interface Specification, Revision: E, Pages: -

Drawing No. 300967, K-Pos Interface Manual, Revision: G, Pages: -

Drawing No. 436095, K-Pos Operator manual release 8.4, Revision: D, Pages: -

Drawing No. 436098, cJoy DP-OT Operator manual release 8.4, Revision: C, Pages: -

Drawing No. 436099, cJoy OT Operator manual release 8.4, Revision: C, Pages: -

Drawing No. 436110, K-Pos Alternative System Operator manual release 8.4, Revision: B, Pages: -

Drawing No. 300994, RHUB200-5 Hardware Module Description, Revision: G, Pages: -

Drawing No. 343879, Moxa Switch EDS-205A Series, 5-Port Unmanaged Ethernet Switch. Hardware Module Description, Revision: D, Pages: -

Drawing No. 472862, DP Basis 8.4.3 Update Notes, Revision: B, Pages: -

Drawing No. 475430, cC-1 Controller Maintenance Manual MNT, Revision: A, Pages: -

Drawing No. 482501, Power Quint-PS 24VDC/24VDC/10A Datasheet, Revision: A, Pages: -

Drawing No. 387155, K-Master Pilot Chair Maintenance Manual, Revision: C, Pages: -

Drawing No. 399517, cJoy Operator Terminal MK3 Hardware Module Description, Revision: C, Pages: -

Drawing No. 408644, RCU602 Hardware Module Description, Revision: C, Pages: -

Drawing No. 417159, Cisco C890 Series Routers Hardware Module Description, Revision: C, Pages: -

Drawing No. 436716, Power and Wiring diagram, El-mech, 700/1400 OS, KM18, Revision: B, Pages: -

Drawing No. 439059, Moxa IKS-6726A/6728A Series Hardware Module Description, Revision: A, Pages: -

Drawing No. 439061, Moxa Port Interface IM-6700A Series Hardware Module Description, Revision: B, Pages: -

Drawing No. 449192, PSU TRIO-PS-2G/1AC/24DC/5/B+D Datasheet, Revision: A, Pages: -

Drawing No. 450167, KM18 700/1400 consoles Maintenance Manual, Revision: B, Pages: -

Drawing No. 450171, Operator panel systems Maintenance Manual, Revision: E, Pages: -

Drawing No. 450176, KM18 700/1400 Extended consoles Maintenance Manual, Revision: B, Pages: -

Drawing No. 450177, KM18 500/700/1400 Various consoles Maintenance Manual, Revision: A, Pages: -

Drawing No. 450347, KM05 650/1300 consoles Maintenance Manual, Revision: A, Pages: -

Drawing No. 463194, Switch Cisco 2960 Hardware Module Description, Revision: A, Pages: -

Drawing No. 463242, USB 3.1 to 4x Gb ethernet DS, Revision: A, Pages: -

Drawing No. 463482, Adapter USB to 1 serial RS232 DS, Revision: A, Pages: -

Drawing No. 427893, K-Master Operator Manual, Revision: D, Pages: -

Drawing No. 436100, cJoy WT Operator manual release 8.4, Revision: A, Pages: -

## KONGSBERG MARITIME AS

POSTBOKS 483

KONGSBERG

Norway NO-3601

Telephone: +47 33 03 24 07

Fax:

Email: km.support@km.kongsberg.com

Web: www.km.kongsberg.com

### Tier: 5 - Unit Certification Required

---

Drawing No. 436105, cJoy Seismic Track Operator manual release 8.4, Revision: B, Pages: -  
Drawing No. 436111, K-Pos Backup System Operator manual release 8.4, Revision: B, Pages: -  
Drawing No. 448540, HW list for 1001-N3, K-Pos type approval, Revision: D, Pages: -  
Drawing No. 464458, Update Notes K-Master 2.1.7, Revision: A, Pages: -  
Drawing No. 413739, Printer Matrix OKI ML-1190, Datasheet, Revision: A, Pages: -  
Drawing No. 445170, Printer OKI ML 280 ECO Datasheet, Revision: A, Pages: -  
Drawing No. 457567, Printer A4 Canon LBP623Cdw Data Sheet, Revision: A, Pages: -

Drawing No. 428577, Test Report for vibration test of Display Stand Lift & Tilt and Display Stand Static, Revision: A, Pages: -  
Drawing No. 428576, Test Report / Statement for Ingress Protection (IP) test of Display Stand, including variants and accessories, Revision: A, Pages: -  
Drawing No. 437952, Test Report for vibration test of 1400 OS Lift&Tilt, Revision: A, Pages: -  
Drawing No. 437956, Test Report for vibration test of 1400 OS Static, Revision: A, Pages: -  
Drawing No. 440066, Test Report for vibration test of 1400 Table, Revision: A, Pages: -  
Drawing No. 437957, Test Report for vibration test of 700 Centre Long, Revision: A, Pages: -  
Drawing No. 445094, Test Report for vibration test of 500 Beside, Revision: A, Pages: -  
Drawing No. 428578, Test Report for EMC test of Linak lifting columns and actuator in Display Stand, and stand-alone, Revision: A, Pages: -  
Drawing No. 445161, KM18 Console Range Environmental Test Summary, Revision: B, Pages: -  
Drawing No. DANAK-198195, Test Report DANAK-198195, Revision: 1, Pages: -  
Drawing No. DANAK-198307, DELTA Test Report DANAK-198307, Revision: 1, Pages: -  
Drawing No. DANAK-198508, DELTA Test Report DANAK-198508, Revision: 1, Pages: -  
Drawing No. E16203, Test Report: Nemko no. E16203.00 (K-Thrust Modules), Revision: 00, Pages: -  
Drawing No. 140487\_TRF\_MAR, Test Report: NEMKO Order No. 140487 Rev 3 (cJoy / cWing), Revision: 3, Pages: -

Drawing No. TL15055, Test Report: MS Testing, TL15055 Issue 5 (Moxa, Managed Ethernet Switch), Revision: 5, Pages: -  
Drawing No. 32743, NEMKO Test Report - EN 60945, Corrosion Test (cWing), Revision: 1, Pages: -  
Drawing No. 309493, CAN2DP Environmental Test Report Delta Test Report, Revision: A, Pages: -  
Drawing No. 357261, Test for Marine Type approval of K-Master Panel System, Revision: B, Pages: -  
Drawing No. 383971, Test for Marine Type approval of RCU602 & RMCST, Revision: B, Pages: -  
Drawing No. 401595, cJoy Operator Terminal MK3 WIN7, Environmental Test Report., Revision: A, Pages: -  
Drawing No. 454647, Printer Matrix OKI ML1190 & Netfilter FN9246-6-06 EMC Report NEMKO, Revision: A, Pages: -  
Drawing No. 454648, Printer Matrix OKI ML-280 ECO & Netfilter FN9246-6-06 EMC Report NEMKO, Revision: A, Pages: -  
Drawing No. 459842, Printer A4 Canon LBP623Cdw 230V Test Report IEC60945 EMC only, Revision: A, Pages: -  
Drawing No. 460139, Computer Adapters Test Report (NEMKO) - E10/60945, Revision: B, Pages: -  
Drawing No. 464983, Serial Adapters RS232/422 TR For those two adapters: 457971-Adapter USB to 1 serial RS232 459962-Adapter USB to 1 serial RS422, Revision: C, Pages: -  
Drawing No. 466406, Test Report TL20007, Cisco switch WS-C2960L- 24TS-LL, Revision: A, Pages: -  
Drawing No. 466409, Test Report TL20006, Cisco switch WS-C2960L- 24TQ-LL, Revision: A, Pages: -  
Drawing No. 2006-3459, IP22 testing of Heading Wheel, Revision: 1, Pages: -  
Drawing No. 2011-3416, EMC and Environmental Testing of Maritime Display, Revision: 01, Pages: -  
Drawing No. 3010-09-0221, Environmental Test Report Vibration Test of K-Master Chair, Revision: -, Pages: -  
Drawing No. 310-04-0125, Environmental verification test cWing and cJoy Kongsberg Maritime AS, Revision: -, Pages: -  
Drawing No. 332991, Environmental tests for RMP201-8 based upon RMP200-8, Revision: -, Pages: -  
Drawing No. 69187, IP22 test of COP-05 units: ALC, BU-NAV, utility, Revision: -, Pages: -  
Drawing No. 9501029033xx 001, Environmental Test Report Joystick KC 06, Revision: -, Pages: -  
Drawing No. DANAK-1910979, Test for Marine Type Approval of Panel Input Mk2 COP 05, Revision: -, Pages: -  
Drawing No. Danak-1910612, Type approval testing of Tracker Ball Stand Alone Panel KM Doc nr 338108, Revision: -, Pages: -

**KONGSBERG MARITIME AS**

POSTBOKS 483

KONGSBERG

Norway NO-3601

Telephone: +47 33 03 24 07

Fax:

Email: km.support@km.kongsberg.com

Web: www.km.kongsberg.com

**Tier: 5 - Unit Certification Required**

---

Drawing No. Danak-198637, IP22 test of KM-05 Deepline and Slimline operator stations, Revision: -, Pages: -

Drawing No. E12059.00, Test report for bridge workstation, Revision: -, Pages: -

Drawing No. DANAK-1916085, L2C Test Report, Revision: A, Pages: -

Drawing No. 482249, KM module test status for table IACS E10 rev 8, Revision: A1, Pages: -

Drawing No. 482250, KM module Declaration of Identity, Revision: A, Pages: -

Drawing No. 487708-03, NEMKO TEST REPORT E21088.03, Revision: 03, Pages: -

Drawing No. RHUB200-5 Module NEMKO TEST REPORT E21059.03, Revision: 03, Pages: -

Drawing No. E11024.03, EMC test report for K-Master Panel System, Revision: 03, Pages: -

Drawing No. TL21143, CISCO 890 Series Network Switch Test Report, Revision: 02, Pages: -

**Terms of Validity:**

This Product Design Assessment (PDA) Certificate remains valid until 30/Dec/2026 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.

**STANDARDS****ABS Rules:**

2021 ABS Rules for Condition of Classification, Part 1: 1-1-4/7.7, 1-1-A3 and 1-1-A4, which covers the following:  
2021 Marine Vessels Rules: 4-8-3/1.3, 4-8-3/1.7, 4-8-3/1.17, 4-8-3/Table 2, 4-9-3/5, 4-9-3/9.5, 4-9-3/11 and 4-9-9/Table 1.

2021 ABS Rules for Condition of Classification - Offshore Units and Structures, Part 1: 1-1-4/9.7, 1-1-A2, 1-1-A3, which covers the following:

2021 Mobile Offshore Units Rules: 4-1-2/3, 4-3-1/11, 4-3-1/17, 4-3-3/Table 1 and 4-3-4/5.

ABS Guide for Dynamic Positioning Systems October 2021: 2/Table 1(Control System), 5/5.5, 5/5.7 and 5/9.

**National:**

NA

**International:**

IACS UR E10 Rev. 8 (Feb 2021)

**Government:**

NA

**EUMED:**

NA

**OTHERS:**

NA