

Marine Equipment Directive EC Type Examination Module B Certificate

This is to certify that TÜV SÜD DANMARK ApS did undertake the relevant type approval procedures for the equipment identified below, which was found to be in compliance with the Marine Equipment Directive (2014/90/EU) requirements, under the following Implementing Regulation for the listed types of equipment

Implementing Regulation	(EU)2021/1158	
Certificate Holder and Manufacturer	Kelvin Hughes Ltd. Voltage Mollison Avenue Enfield Middlesex, EN3 7XQ United Kingdom	
EC Representative	Kelvin Hughes (Nederland) B.V. Klompemakerstraat 64 Hoogvliet-Rotterdam 3194 DE The Netherlands	
Product(s)	S & X Band Radar Navigation System	
Product Sector	Navigation Equipment	
Product Type	MED/4.34	Radar Equipment CAT 1
	MED/4.37*	Radar equipment for high speed craft applications (CAT 1H)
	MED/4.38a	Radar Equipment CAT 1 with Chart Option
	MED/4.38c*	Radar equipment for high speed craft applications approved with a chart option, CAT 1HC

and on the basis of the Technical Data and information detailed in the Annex to this certificate.

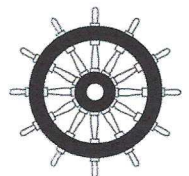
*Limited applicability

Valid from: 14 June 2022


 (Tom Twynam)

Expiry Date: 26 August 2026

This certificate has been issued in accordance with the TÜV SÜD Testing and Certification Regulations and constitutes page 1 of the combined Certificate and Annex. The Conditions for the validity of this certificate are listed in the Annex. For further details, related to this certification please contact BABT@tuvsud.com



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1 Equipment Description

Shipborne Radar Equipment CAT 1, CAT 1H and Radar Equipment CAT 1 and CAT 1HC with Chart Option

1.1 Models

Model
S & X Band Radar Navigation System

1.1.1 System Components – above deck sensor options

Model	Description
DTX-A40-xAAA ^{Note 1}	Mk11 SharpEye X Band Transceiver
DTX-A40-xBBA ^{Note 1}	Mk11 SharpEye X Band Transceiver
DTX-A40-xBEA ^{Note 1}	Mk11 SharpEye X Band Transceiver
DTX-A40-xBEB ^{Note 1}	Mk11 SharpEye X Band Transceiver
with LPA-A25-x ^{Note 2}	2.5m X Band Antenna
DTX-A40-xDBA ^{Note 1}	Mk11 SharpEye X Band Transceiver
with LPA-A25-x-C ^{Note 2}	2.5m X Band Antenna
DTX-A30-xAAA ^{Note 1}	Mk11 SharpEye S Band Transceiver
DTX-A30-xBCA ^{Note 1}	Mk11 SharpEye S Band Transceiver
DTX-A30-xDCA ^{Note 1}	Mk11 SharpEye S Band Transceiver
with LPA-A3-x-C ^{Note 2}	3.9m S Band Antenna
DTX-A1-xNKA ^{Note 1}	Mk7 SharpEye S Band Transceiver
with LPA-A3-x ^{Note 2}	3.9m S Band Antenna
PCV-A1-xAAA ^{Note 1&15}	Mk 5 SharpEye X Band Transceiver
with LPA-A13	1.3m X Band Antenna
with LPA-A13-xBAA ^{Note 1}	1.3m X Band Antenna
with LPA-A13-xAAA ^{Note 21}	1.3m X Band Antenna
with LPA-A19	1.9m X Band Antenna
with LPA-A19-xAAA ^{Note 1}	1.9m X Band Antenna
E70351	X Band 12kW Transceiver
with E70350	1.9m X Band Antenna

1.1.2 System Components – below deck equipment

Model	Description
Minimum system components	
MDC-A26-1 ^{Note 3}	26" Panel PC
MDC-A201-1 ^{Note 3, 4}	Managed Network Switch
MDC-A200 ^{Note 3}	Serial Network Converter
MDC-A202-1 ^{Note 5}	Desktop Keyboard and Trackerball Assembly



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Model	Description
E70352 ^{Note 6}	X Band 12kW Power Supply
GTX-A24 ^{Note 7}	Drive Control Unit Assembly
PCV-A2-xAAA	Mk5 SharpEye PSU
Optional system components	
MDC-A202	Console Keyboard and Trackerball Assembly
MDC-A203	Console Keyboard Assembly
MDC-A204	Console Trackerball Assembly
17610398 ^{Note 8}	Keyboard and Trackerball Assembly
DTX-A50-xAAA ^{Note 9, 10}	Power Control Unit
NAN-A27-x ^{Note 9}	Man Aloft Switch
MDC-A100-26	26" Desktop Stand

1.2 Software ^{Note 11}

Identity	Version	Description
ZM-2300	3.7	Navigation Software
ZM-2762	2.1	SharpEye Software (Mk 11 X Band)
ZM-2808	1.4	SharpEye Software (Mk 11 S Band)
E70351	5.11	X Band 12kW Transceiver
ZM-2849	1.4	SharpEye Software (Mk 7 S Band)
ZM-2847	1.10	SharpEye Software (Mk 11 S Band)
ZM-2844	1.8	SharpEye Software (Mk 11 X Band)
ZM-2845	1.5	SharpEye Software (Mk 11 X Band) ^{Note 12}
ZM-2924	1.3	SharpEye Software (Mk 5 X Band)
Windows 10 IoT Enterprise 2019 LTSC		Baseline Operating System

2 Assessed Requirements

2.1 Implementing Regulation (EU)2021/1158

2.2 Compliance Requirements for MED/4.34, MED/4.37, MED/4.38a and MED/4.38c ^{Note 15}

IMO Resolutions		International Testing Standards
Resolution MSC.192(79)	IEC 62388 (2013) ^{Note 14}	Maritime navigation and radiocommunication equipment and systems — Shipborne radar
Resolution MSC.191(79)	IEC 62288 (2014)	Maritime navigation and radiocommunication equipment and systems — Presentation of navigation-related information on shipborne navigational displays — General requirements
Resolution A.694(17)	IEC 60945 (2002) incl. IEC 60945 Corr. 1 (2008)	Maritime navigation and radiocommunication equipment and systems — General requirements
	IEC 61162-1 (2016)	Maritime navigation and radiocommunication equipment and systems — Digital interfaces Part 1: Single talker and multiple listeners

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IMO Resolutions		International Testing Standards
	IEC 61162-2 (1998)	Maritime navigation and radiocommunication equipment and systems — Digital interfaces Part 2: Single talker and multiple listeners, high-speed transmission
	IEC 61162-450 (2018)	Maritime navigation and radiocommunication equipment and systems — Digital interfaces Part 450: Multiple talkers and multiple listeners — Ethernet interconnection
Resolution MSC.302(87)	IEC 62923-1 (2018) ^{Note 13}	Maritime navigation and radiocommunication equipment and systems – Bridge alert management Part 1: Operational and performance requirements, methods of testing and required test results
	IEC 62923-2 (2018)	Maritime navigation and radiocommunication equipment and systems – Bridge alert management Part 2: Alert and cluster identifiers and other additional features
ITU-R Recommendation	ITU-R M.1177-4 (2011)	Techniques for measurement of unwanted emissions of radar systems

3 Technical Documentation

3.1 Declaration of Conformity

Declaration of Conformity, DOC-2092 Revision 11

3.2 User Guide

Navigation Display Operators Handbook, HBK-2300-1, Revision 8
 Kelvin Hughes Navigation Display Installation & Commissioning, HBK-2300-2, Revision 6
 Kelvin Hughes X-band 12kW Upmast Transceiver, HBK-2300-3, Revision 5
 Kelvin Hughes MK 7 S-Band Transceiver (Asterix), HBK-2300-4, Revision 2
 Kelvin Hughes MK 11 S-Band Transceiver (Asterix), KH-1605-3, Revision 4
 Kelvin Hughes MK 11 X-Band Transceiver (Asterix), KH-1605-1, Revision 4
 Kelvin Hughes MK 5 SharpEye™ Upmast X-Band Transceiver, KH-2200-1, Revision 3

3.3 Technical Documentation

Technical Document File Indexes:

DTX-K40-BAAA Revision 5, 2016-11-18	E70350-K Revision 1, 2016-11-17
LPA-K25-1 Revision 3, 2016-11-17	E70351-K Revision 1, 2016-11-17
DTX-K30-BAAA Revision 4, 2016-11-18	E70352-K, Revision 1, 2016-11-17
DTX-K1-ANKA Revision 2, 2016-11-18	MDC-K201-1 Revision 2, 2016-11-17
LPA-K3-1 Revision 2, 2016-11-17	MDC-K200 Revision 2, 2016-11-17
MDC-K26-1 Revision 2, 2019-09-12	MDC-K202 Revision 2, 2016-11-17
DTX-K30-BBCA Revision 1, 2016-11-17	NAN-K27-1 Revision 2, 2016-11-17
DTX-K40-BBBA Revision 1, 2016-11-17	45-975-0731-001-TDF Revision 1, 2018-09-27
DTX-K40-BBEA Revision 1, 2017-03-01	ZM-2300-TDF Revision 6, 2022-03-01
DTX-K40-BBEB Revision 1, 2017-03-01	LPA-K13 Revision 2, 2014-05-19
DTX-K50-BAAA Revision 2, 2016-11-17	LPA-K19 Revision 2, 2014-05-19
DTX-K30-BBCA Revision 2, 2022-06-14	PCV-K1-AAAA Revision 1, 2021-11-19
DTX-K30-BDCA Revision 2, 2022-06-14	PCV-K1-BAAA Revision 1, 2021-11-19
DTX-K40-BDBA Revision 1, 2018-05-03	PCV-K2 Revision 1, 2021-11-19
LPA-K25-2-C Revision 1, 2018-05-03	PCV-K2-BAAA Revision 1, 2021-11-19
LPA-K3-2-C Revision 1, 2018-05-03	-

The above being comprehensive listings of documentation relevant to type examination including test reports and details of approved hardware defining overall build level and including circuit diagrams, technical drawings and parts listings (BoM).



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3.4 Notes

- Note 1 x denotes a letter referencing the final colour of the unit; A signifies white, B signifies grey.
- Note 2 x denotes a letter referencing the final colour of the unit; 1 signifies white, 2 signifies grey.
- Note 3 Each sensor requires a dedicated Panel PC (MDC-A26-1). Where the system includes more than one sensor it shall include a minimum of two Serial Network Convertors (MDC-A200) and two Managed Network Switches (MDC-A201-1).
- Note 4 In line with current IEC 61162-460 regulations, any IEC 61162-450 approved VDR or sensor may be connected to Port 7 of the MDC-A201-1 Managed Network Switch without contacting Kelvin Hughes. Connection to unprotected networks must be via an IEC 61162-460 secure gateway.
- Note 5 Each display must be connected to a Trackerball assembly, the use of a keyboard is optional.
- Note 6 Required only for use with E70351, X Band 12kW Transceiver.
- Note 7 Required only for use with DTX-A1-ANKA, Mk7 SharpEye S Band Transceiver.
- Note 8 Keyboard and Trackerball is Keytouch Technology AS Part No. 17610398 and may also be identified by Kelvin Hughes Part No. 45-975-0731-001.
- Note 9 The Power Control Unit is an optional unit which can be used to protect and control the AC mains supply to the DTX-A40-xxxx and DTX-A30-xxxx turning units. If not used the mains supply should be connected via suitable breakers.
- Note 10 x is a numeral signifying different colour variants.
- Note 11 This approval remains valid for equipment including subsequent minor software amendments which have been formally accepted in accordance with the TÜV SÜD Testing and Certification Regulations.
- Note 12 SharpEye Software (Mk 11 X Band) ZM-2845 contains an additional Helo Mode of operation which is outside of the system type approval. Refer to Kelvin Hughes for advice on use.
- Note 13 This system meets the requirements of IEC 62923-1 for EUT function type P to make it BAM compliant.
- Note 14 Full requirement for Chart Radar are integrated into the IMO Resolution and IEC Standard and form an optional enhancement on standard radar which when enacted qualify the radar for the "C" suffix and MED Item MED/4.38a.
- Note 15 For compliance with High Speed Craft requirements MED/4.37 and MED/4.38c the PCV-A1-xAAA, Mk5 SharpEye X Band Transceiver, needs to be part of the installation.

4 U.S. Coast Guard Number

This product has been assigned U.S. Coast Guard Module B number

165.115/EC2443
165.216/EC2443

To note type approval to Module B only as it pertains to obtaining US Coastguard approval as allowed by the "Agreement between the European Community and the United States of America on Mutual Recognition of Certificates of Conformity for Marine Equipment" signed February 18th, 2019

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5 Conditions of Validity

This certificate ceases to be valid if the manufacturer makes any changes or modifications to the approved type of equipment, which have not been notified to, and agreed with TÜV SÜD DANMARK ApS or a person appointed by TÜV SÜD DANMARK ApS to perform that role.

During the period of validity of this certificate the applicable regulations (international conventions and relevant resolutions and circulars of the IMO) and testing standards of the Commission Implementing Regulation may change, therefore the product conformity may need to be re-assessed by TÜV SÜD DANMARK ApS.

The Mark of Conformity may only be affixed to the above type approved equipment and a manufacturer's Declaration of Conformity issued when the production-control phase module (D, E, or F) of the directive is fully complied with and controlled by a written inspection agreement with a notified body.

Signature: *T. J. Twynam*
(Thomas J. Twynam)

Date: 2022-06-14

On behalf of TÜV SÜD DANMARK ApS