



Marine Equipment Directive Module B Type Examination Certificate

This is to certify that TÜV SÜD B A B T did undertake the relevant type approval procedures for the equipment identified below which was found to be in compliance with the Navigation requirements of Marine Equipment Directive 96/98/EC as amended by Commission Directive 2014/93/EU and that the equipment of

Kelvin Hughes Ltd

of

Voltage
Mollison Avenue
Enfield
Middlesex
EN3 7XQ
United Kingdom

known as

MK11 SharpEye™ MantaDigital™ X & S Band Radar System

conforms to the relevant requirements for the following equipment as listed in Marine Equipment Directive Annex A.1:

**Annex A.1/4.35 Radar Equipment CAT 2 and
A.1/4.38b Radar Equipment CAT 2 with Chart Option**

as defined in Commission Directive 2014/93/EU

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

Signed:

On Behalf of TÜV SÜD B A B T

Issue Date: 17 March 2016

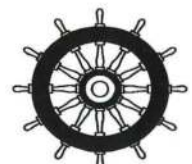
Number: B A B T-MED000089 Issue: 01

This certificate has been issued in accordance with the Certification Regulations of TÜV SÜD B A B T (Notified Body Number 0168) and constitutes page 1 of the combined Certificate and Annex

This certificate is valid from 17 March 2016 until not later than 16 March 2021

The Conditions for the validity of this certificate are listed in the Annex.
For further details related to this certification please contact BABT@tuv-sud.co.uk

TÜV SÜD B A B T • TÜV SÜD Group
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0168

Annex to

Marine Equipment Directive Module B Type Examination Certificate

Description of Equipment:

Shipborne Radar Equipment (MED Item A.1/4.35)
and Radar Equipment with Chart Option (MED Item A.1/4.38b).

Model: MK11 SharpEye™ MantaDigital™ X & S Band Radar System

		Category 2			Category 2C		
		Pedestal	Desktop	Kit Form	Pedestal	Desktop	Kit Form
System Components:							
Mk11 SharpEye X Band Turning Unit	DTX-A40-xAAA ^{Note 1}	X	X	X	X	X	X
2.5m X Band Antenna (white or grey)	LPA-A25-x ^{Note 2}	X	X	X	X	X	X
Mk11 SharpEye S Band Turning Unit	DTX-A30-xAAA ^{Note 1}	X	X	X	X	X	X
3.9m S Band Antenna (white or grey)	LPA-A3-x ^{Note 2}	X	X	X	X	X	X
Power Control Unit	DTX-A50 ^{Note 3}	X	X	X	X	X	X
Managed Network Switch	MDC-A201-1 ^{Note 4}	X	X	X	X	X	X
MantaDigital 22" Display Pedestal & integrated Radar Processor	MDD-A1-22	X			X		
MantaDigital Radar Processor	MDP-A1		X	X		X	X
MantaDigital 22" Desktop Display	MDD-A30-22		X			X	
MantaDigital 22" Console Display	MDD-A20-22			X			X
MantaDigital Remote Trackerball	MDD-A110			X			X

Software:	Code Identity	Version ^{Note 5}
MantaDigital Core Software	ZM-2144	2.10.5
SharpEye Core Software (X Band)	ZM-2762	1.81
SharpEye Core Software (S Band)	ZM-2808	1.21
Display Interface Firmware	ZM-2007 (FSD-A179)	1.6
Systems Interface Firmware (software fitted depends on date of manufacture)	ZM-2008 (FSD-A178)	1.6
	ZM-2797 (FSD-A178)	1.1



Description of Equipment Continued – Ancillary & Optional Units:

The applicant declared that the following units may be added to the basic radar systems illustrated on page 2. These units have been assessed & tested in conjunction with MantaDigital™ and SharpEye™ series radar systems.

ANCILLARY UNITS:-

MantaDigital™ Keyboard & Trackerball	MDD-A101 ^{Note 6}
MantaDigital™ Control Panel & Trackerball	MDD-A102 ^{Note 6}
MantaDigital™ Trackerball & pencil tray	MDD-A100 ^{Note 6}
MantaDigital™ Remote Keyboard	MDD-A130 ^{Note 6}
Ergonomic Trackerball (Ergopod, right handed)	NNR-A18 ^{Note 6}
Ergonomic Trackerball (Ergopod, left handed)	NNR-A18-2 ^{Note 6}
Serial Interface Module (provides 8 additional ports)	FSD-A198
Man Aloft Switch	NAN-A27-x ^{Note 7}

NOTES:-

- 1 x denotes a letter referencing the final colour of the unit.
- 2 x denotes a number referencing the final colour of the unit.
- 3 The Power Control Unit is an optional unit which can be used to protect and control the AC mains supply to the DTX-A40-xAAA and DTX-A30-xAAA turning units. If not used the mains supply should be connected via suitable breakers.
- 4 This item provides a dedicated radar network for connection between MK 11 radar systems. There are no user accessible networking functions. Connection of any third party network services to the MantaDigital™ system may invalidate the Type Approval and must be pre-approved by Kelvin Hughes prior to connection and use.
- 5 This approval remains valid for equipment including subsequent minor software amendments which have been formally accepted in accordance with the Certification Regulations of TÜV SÜD BABT.
- 6 These are alternative/additional control options to the standard trackerball.
- 7 x is a numeral signifying different colour variants.

Compliance Matrix For MED Item A.1/4.35 and A.1/4.38b

IMO Resolutions	International Testing Standards	
Resolution MSC.192(79)*	IEC 62388:2007*	Marine Shipborne Radar Equipment
Resolution MSC.191(79)	IEC 62288:2008	Presentation of navigation-related information
Resolution A694(17)	IEC 60945:2002	General Requirements for Marine Navigation Equipment (Inc. Corr1:2008)
	IEC 61162-1:2010	Digital Interfaces – Part 1, single talker
	IEC 61162-2:1998	Digital Interfaces – Part 2 High Speed interface
ITU-R Recommendations	M.1177-4:2011	Unwanted Emissions from Radar Systems

* 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 A.1/4.38.



Manufacturer:

Name: Kelvin Hughes Ltd
Address: As Holder.

Relevant Technical Documentation

Manuals:

MantaDigital™ Operator Handbook	HBK-4001-1, Issue 5
MantaDigital™ Operator Handbook	HBK-4001-2, Issue 5
X-band Mk11 Turning Unit Installation, termination, commissioning and maintenance manual	KH-1605-1 Issue 1
S-band Mk11 Turning Unit Installation, termination, commissioning operation and maintenance handbook	KH-1605-3 Issue 1
MantaDigital termination & commissioning Software Installation Handbook	HBK-2001, Issue 5, 2015-02-17 HBK-4003, Issue 2, 2014, 11-25

Technical Document File Indexes:

DTX-K40-BAAA Revision 3, 2016-03-16	MDP-K1 Revision 6, 2016-03-16	MDD-K100 Revision 4, 2016-03-16
LPA-K25-1 Revision 2, 2016-03-16	MDD-K30-22 Revision 5, 2016-03-16	MDD-K130 Revision 4, 2016-03-16
DTX-K30-XAAA Revision 1, 2016-03-16	MDD-K20-22 Revision 4, 2016-03-16	NNR-K18 Revision 3, 2016-03-16
LPA-A3-1 Revision 1, 2016-03-16	MDD-K110 Revision 4, 2016-03-16	NNR-K18-2 Revision 3, 2016-03-16
DTX-K50 Revision 1, 2016-03-16	MDD-K101 Revision 4, 2016-03-16	FSD-K198 Revision 3, 2016-03-16
MDD-K1-22 Revision 6, 2016-03-16	MDD-K102 Revision 4, 2016-03-16	MDC-K201-1 Revision 1, 2016-03-16
NAN-K27-1 Revision 1, 2016-03-16	-	-

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).

U.S. Coast Guard Number :

This product has been assigned U.S. Coast Guard Module B number
165.120/EC0168

(This is only applicable to operation Target Tracking (ARPA) aspect of the radar)

Note: The US Coastguard approval number above is issued in accordance with the "Agreement between the European Community and the United States of America on Mutual Recognition of Certificates of Conformity for Marine Equipment" signed February 27th, 2004



Conditions of Validity

This issue of the Annex to the referenced Marine Equipment Module B Certificate relates to Issue 1 of the Certificate.

This certificate will not be valid if the manufacturer makes any changes or modifications to the approved equipment, which have not been notified to, and agreed with TÜV SÜD B A B T or a person appointed by TÜV SÜD B A B T to perform that role.

Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be reapproved prior to it/them being placed on board vessels to which the amended regulations or standards apply.

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 ANNEX B of the Directive is fully complied with and controlled by a written inspection agreement with a notified body.

Signed: 
on behalf of TÜV SÜD B A B T

Date: 17th March 2016