DET NORSKE VERITAS

EC TYPE EXAMINATION CERTIFICATE

Application of: Council Directive 96/98/EC of 20 December 1996 on Marine Equipment as amended by directive 2012/32/EU, issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Directorate. This Certificate is issued by Det Norske Veritas under the authority of the Government of the Kingdom of Norway.

CERTIFICATE NO. **MED-B-9102**

This is to certify that the
Heading control system (HCS)

with type designation(s)
AP70, AP80

Issued to
Navico Holding AS
EGERSUND, Norway

is found to comply with the requirements in the following Regulations/Standards:
Annex A.1, item No. A.1/4.16 and Annex B, Module B in the Directive. SOLAS 74 as amended, Regulation V/18 & V/19, IMO Resolution A.342 (IX) & A.694(17) and IMO Resolution MSC. 64(67) Annex 3 & 191(79)

Further details of the equipment and conditions for certification are given overleaf.

Høvik, 2014-06-16
for **Det Norske Veritas AS**

for **Marianne Strand Valderhaug**
Head of Department

Notified Body No.: **0575**

DNV local office:
Stavanger

This Certificate is valid until
2017-08-21

Roger Lauritsen
Surveyor

DET NORSKE VERITAS * 1864 *

NORWEGIAN ACCREDITATION PROD 019

The Certificate is subject to terms and conditions overleaf. Any significant changes in design or construction of the product, or amendments to the Directive or Standards referenced above may render this Certificate invalid. The product liability rests with the manufacturer or his representative in accordance with Council Directive 96/98/EC, as amended. The Mark of Conformity may only be affixed to the product and a Declaration of Conformity may only be issued when the production/product assessment module referred to in the council directive, is fully complied with.

Product description
See Appendix
For latest revision of the Appendix, see ***http://exchange.dnv.com/tari***

Application/Limitation
- Istallation to be performed in accordance with manufacuters installation manuals.
- A change-over control from automatic to manual steering shall be provided and located easily accessible to the officer of the watch.
- Steering gear interfacing SG05 PRO shall by Navico be qualified to follow the CAN SS – AP Interface specification
- AP70/80 have been verified to comply with relevant requirements for a heading repeaters according to ISO 8728 and 16328.

Type Examination documentation
See Appendix

Tests carried out
- Environmental tests, IEC 60945 (2002) including corrigendum 1 (2008)
- Serial Interface tests, IEC 61162-1 (2010) and IEC 61162-2 (1998)
- Performance testing, presentation, IEC 62288 (2008)
- Performance tests, HCS, ISO 11674 (2006)
- Performance tests, HCS for High Speed Crafts, ISO 16329 (2003)
- Performance tests, Heading repeater, ISO 8728 (1997) sec. 4.3-4.5 & 6.8.
- Performance tests, Heading repeater for High Speed Crafts, ISO 16328 (2001) sec. 4.4-4.6 & 6.8.

Marking of product
The Manufacturer and Type Designation to be applied to the equipment in a clearly visible location and in addition the equipment shall be marked with serial number, safe distance to magnetic compass, power consumption and/or supply voltage.

Mark of Conformity
The manufacturer is allowed to affix the Mark of Conformity according to Article 11 in the Council Directive 96/98/EC on Marine Equipment and shall issue a Declaration of Conformity, only when the module D or E or F of Annex B in the same directive is fully complied with.

Module D: The quality system for production and testing shall be approved by the Notified Body.

Module E: The quality system for inspection and testing shall be approved by the Notified Body.

Module F: Compliance of the products to type as described in this EC Type-Examination Certificate must be verified by the Notified Body who also shall issue a Certificate of Conformity.

USCG Approval
An U.S. Coast Guard approval number will be assigned to the equipment when the production module has been completed and will appear on the production module certificate (module D, E or F), as allowed by the "Agreement between the United States of America and the EEA EFTA states on the mutual recognition of certificates of conformity for marine equipment" signed 17 October 2005.

APPENDIX Rev. No. 1 (Page 1 of 1)

Product description

AP70 / AP80 Heading control systems consist of the following component :

Unit	Description	Sw ver.	Location
Operator units:			
AP70 and/or	Control Unit	1.2.xx	Exposed
AP80	Control Unit	1.2.xx	Exposed
Remote operator units:			
QS80 (optional)	Non follow up quick stick lever	1.2.xx	Exposed
FU80 (optional)	Follow up lever	1.2.xx	Exposed
NF80 (optional)	Non follow up lever	1.2.xx	Exposed
R3000X (optional)	Portable remote control	NA	Portable
JS10 (optional)	Non Follow up lever	NA	Protected
S35 (optional)	Non Follow up lever	NA	Exposed
S9 (optional)	Non Follow up lever	NA	Exposed
Computers:			
AC80A or	With AD80 and SI80 board	1.2.xx	Protected
AC80S or	With SD80 and SI80 board)	1.2.xx	Protected
AC85 and	With SI80 and optional boards a)	1.2.xx	Protected
with max 5 b) optional			Protected
computers of any			Protected
combination below			Protected
AC80A	With AD80 and SI80 board	1.2.xx	Protected
AC80S	With SD80 and SI80 board)	1.2.xx	Protected
AD80	With AD80 board	1.2.xx	Protected
SD80	With SD80 board	1.2.xx	Protected
AC85	With SI80 and optional boards a)	1.2.xx	Protected
Interface units:			
CZone	Network interface (Simnet)	2.x	Protected
SG05 PRO c)	Network gateway (Simnet/CAN for steering system)	1.2.xx	Protected
SI80	With SI80 interface board (serial)	1.2.xx	Protected
Sensors (optional) :			
RC42N	Monitor compass (not for steering)	1.3.xx	Protected
CD100A	Course detector	NA	Exposed
CDI80	Course detector	1.1.xx	Protected
GI51	Gyro compass interface	1.2.xx	Protected
RF300	Rudder feedback unit	NA	Exposed
RF45X	Rudder feedback unit	NA	Exposed
RF14XU	Rudder feedback unit	NA	Exposed
RF25N	Rudder feedback unit	1.2.xx	Exposed
RF70N	Rudder feedback unit	1.2.xx	Exposed

a) AC85 can have any combination of optional boards. AD80 (max 3)/ SD80 (max 3)/AC70 (max 2).
b) Max 2 if SG05 PRO is installed,
c) Max 1

Type Examination documentation

DNV No.	Doc. Ref.	Description
36	988-10617-001	Manual: Installation guide RF70N
33	988-10199-002	Manual: FU80-NF80-QS80 User Guide
32	988-10197-002	Manual: AP70-AP80 Installation Manual
31	988-10198-002	Manual: AP70-AP80 Operator Manual
30	ADD EN 988-10674-001	Manual: Addendum for AP70/AP80 sw release 1.2
29	REV C 092211	Manual: CAN SS – AP Interface specification
20	TNQ20120601-01	Report: Navico, AP70/AP80 autopilot system, FMEA
19	TNP20120601-01	Report: Navico, AP70/AP80 autopilot system, ISO performance tests inc. rudder angle indicator and heading repeater
18	TNH20120601-01	Report: Navico, AP70/AP80 autopilot system, Excessive voltage test
17	TAP20120605-1	Report: Navico, Medusa AC70 NMEA0183 Receiver test
16	T1106-1	Report: Uniservices, Sound pressure measurements of Simrad AP80 (PV2) Autopilot
15	2012-3214 rev 2	Report: DNV, Environmental testing of AP70/80 Autopilot system
14	120513_1	Report: EMC Tech., EN60945 tests for Simrad AD80 Autopilot computer
13	120507_1	Report: EMC Tech., EN60945 tests for Simrad FU80,NF80 & QS80 Autopilot remotes
12	120501_1	Report: EMC Tech., EN60945 tests for Simrad AC70 Autopilot computer
11	120414_1	Report: EMC Tech., EN60945 tests for Simrad SI80 & SD80 Autopilot system
10	111029_1	Report: EMC Tech., EN60945 tests for Simrad AP80 Autopilot
9	111002_1	Report: EMC Tech., EN60945 tests for Simrad AP70 Autopilot
8	96_1013	Report: DNV, Type testing of SIMRAD AP9
7	2002-3131	Report: DNV, Type tests of items for Simrad AP50
6	2003-3440	Report: DNV, Type tests of items for Simrad AP50
5	2004-3514	Report: DNV, Type tests of items for Simrad AP50
3	20221594/Cb	Manual: Simrad G151 Gyro interface
2	199949289	Report: NEMKO, EMC Test report, AP9 MK3 Standard system

Place and date
HØVIK, 2014-06-16

Roger Lauritsen
Approval Engineer