DNV·GL

Certificate No:
TAA00002G5

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Remote Control System, Water Jet

with type designation(s)
AVX

Issued to
C W F Hamilton & Co. Ltd.
Christchurch, New Zealand

is found to comply with
DNV GL rules for classification – Ships

Application :

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

Location classes:

Temperature	**D**
Humidity	**B**
Vibration	**A**
EMC	**B**
Enclosure	**C**

Issued at **Hamburg** on **2019-12-12**
This Certificate is valid until **2021-12-11**.
DNV GL local station: **Auckland**

Approval Engineer: **Dariusz Lesniewski**

for **DNV GL**

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.

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Product description

AVX Waterjet Control System

AVX Units:

Unit	Model	Software module	Software version
PCU Propulsion Control Unit	CTITF18001 – PCUmain	PCUmainBootloader-STM32F405VG PCUPropulsionLine-STM32F405VG	301614 301615
	CTITF18001 – PCUbackup	PCUmainBootloader-STM32F405VG PCUPropulsionLine-STM32F405VG	301611 301612
VCU Vessel Control Unit	CTITF19000 - VCUmain	VCUmainBootloader-STM32F405VG VCUControl-STM32F405VG	301626 301627
	CTITF19000-VCUgate	VCUgateBootloader-STM32F405VG VCUgateKeeper-STM32F405VG	301623 301624
NTU Network Tee Unit	CTITF16000-NTUmain	NTUmainBootloader-STM32F405VG NTUMonitor-STM32F405VG	301608 301609
JCU Jet Control Unit	CTITF13000-JCUmain	JCUmainBootloader-STM32F405VG JCUControl-STM32F405VG	301605 301606
XIU External Interface Unit	CTITF17000-XIUmain CTITF17000-XIUxi	XIUmainBootloader-STM32F303RC XIUBusGuardian-STM32F303RC	301640 301641
HWU Helm Wheel Unit	CTHLM13000-CIUmain	CIUmainBootloader-STM32F303RC CIUConsole-STM32F303RC	301602 301604
HJU Helm Joystick Unit	CTHLM14000-CIUmain	CIUmainBootloader-STM32F303RC CIUConsole- STM32F303RC	301602 301603
DLU Dual Lever Unit	CTCLV12001-CIUmain	COUmainBootloader-STM32F303RC CIUConsole- STM32F303RC	301602 301603
SDU Station Display Unit	CTCPL18001-SDUmain	SDUmainBootloader-STM32F405VG SDUConsole-STM32F405VG	301620 301603
	CTCPL18001-SDUapi	SDUapiBootloader-STM32F405VG SDUAPI-STM32F405VG	301617 301618
	CTCPL18001-SDUCom	SDUDisplay-iMX6	302247
	CTCPL18001- 502.11 b/g/n Module	WF111-Bluegiga (Wifi Module)	WF111-A
BIU Backup Input Unit	CTCPL19001-BIUmain	BIUmainBootloader-STM32F303RC BIUConsole- STM32F303RC	301599 301600
ACU Advanced Controls Unit	CTITF20000-ACUmain	ACUmainBootloader-STM32F405VG ACUBusGuardian-STM32F405VG	310559 310562
	CTITF20000-ACUac	ACUmainBootloader-STM32F405VG ACUControl-STM32F405VG	310563 310566
MBU Mouseboat Unit	CTCLV10000-MBUmain	MBUmainBootloader-STM32F405VG MBUConsole-STM32F405VG	310555 310558

LCU Local Control Unit	CTCPL20000-LCUMain	LCUmainBootloader-STM32F405VG LCULocalControl-STM32F405VG	310567 310586

AVX cables (Hamilton delivery):

Part number	Cable type
CTWIR171XX	Communication
CTWIR172XX	Dual Communication
CTWIR173XX[1)]	Communication + Power
CTWIR174XX	Power
CTWIR17705	Auto Pilot
318020	JET Loom

[1)] type approval pending

Accessories[2)]:
Hemisphere V123 / MED-D Cerificate no.: PTL-MED-D-17-111343b (Notified Body Number 0700)
[2)] Not subject to this certification

Approval conditions

The following documentation of the actual application is to be submitted for approval in each case:
- Reference to this Type Approval Certificate
- Functional description
- System block diagram
- Power supply arrangement (may be part of the System block diagram)
- List of control and monitored points
- Circuit diagrams
- Test program for certification

The Type Approval covers hardware and software listed under Product description.

AVX Software Package 12.2
The software units revisions are listed in document TECH-70-0047 (ECN: 31788) "HamiltonJet AVX Software Revision History" (Ver. 2.0).

When the type approved software is revised (affecting all future deliveries) DNV GL is to be informed by forwarding updated software version documentation. If the changes are judged to affect functionality for which rule requirements apply a new functional type test may be required and the certificate may have to be renewed to identify the new software version.

Product certificate
Each delivery of the application system is to be certified according to Pt.4 Ch.9 Sec.1. The certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard or at the yard during installation, if that is agreed by all involved parties (manufacturer, DNV GL Auckland, yard and possibly the surveyor attending at the yard). After the certification the clause for application software control will be put into force.

Application 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 GL for evaluation and approval before implemented on board.

Type Approval documentation

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.

Marking of product

The products to be marked with:
- manufacturer name
- model name
- serial number
- power supply ratings

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

A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE