DNV·GL

TYPE APPROVAL CERTIFICATE

Certificate No:
TAA000016D
Revision No:
1

This is to certify:

That the Governor Control System

with type designation(s)
PRIAMOS I/II/III for Multi-Engine Propulsion or Gen-Set Applications

Issued to
Heinzmann GmbH & Co. KG
Schönau im Schwarzwald, Baden-Württemberg, Germany

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

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

Temperature	**B**
Humidity	**B**
Vibration	**A, B for actuators**
EMC	**A**
Enclosure	**B**

Issued at **Hamburg** on **2019-12-06**

This Certificate is valid until **2021-12-05**.
DNV GL local station: **Augsburg**

Approval Engineer: **Jens Dietrich**

Digitally Signed By: Rinkel, Marco
for **DNV GL**
Location: Hamburg, on behalf of

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.

Job Id: **262.1-004164-10**
Certificate No: **TAA000016D**
Revision No: **1**

Product description

Type Priamos I, Priamos II, Priamos III in multi-engine propulsion or gen-set applications, comprising of:

Main System	**Basic System**	**Actuator**	**Control unit**	**Power supply**
PRIAMOS I	DG 16.1-03 DG 30.1-03 DG 40.1-03	StG 16 StG 30 StG 40	DC 16.1-03	NG08 + NSV + Voltage limiter altern. NG09 + Voltage limiter 3~ 200/400/440V 50/60Hz
PRIAMOS II without brake in actuator (multi engine propulsion and genset application)	DG 64.1-03 DG 90.1-03	StG 64 StG 90	DC 64.1-03 DC 90.1-03	NG08 + NSV + Voltage limiter altern. NG09 + Voltage limiter 3~ 200/400/440V 50/60Hz
PRIAMOS III without brake	DG 180.1-04	StG 180	DC 180.1-04	NG08 + NSV + Voltage limiter altern. 3~ 200/400/440V 50/60Hz
Speed-pick-up inductive: IA 02-xxx(metrical thread), IA 12-xxx (UNF thread), controller with matching input-circuits				
Setpoint Potentiometer: SW 01-1 and SW 02-10				

Basic software:
PRIAMOS I (DC1-03), PRIAMOS I II (DC1-03), PRIAMOS III (DC1-04); 00.0.13 general governor SW.

Basic software-versions:
Propulsion Mode: basis software and derived variants

PRIAMOS I II	PRIAMOS III	Note
00.4.13	00.4.13	Local/Remote speed setpoint Propulsion mode fixed
00.6.13	00.6.13	Local/Remote speed setpoint Propulsion mode fixed Master/Slave via CAN configurable
136.00.02	136.00.02	Local/Remote speed setpoint Propulsion mode configurable
139.00.03	139.00.03	Second switchable engine start ramp implemented

Propulsion Mode: software variants for MAN and MAN licensees

PRIAMOS I II	PRIAMOS III	Note
04.0.47	04.5.47	Local/Remote speed setpoint Propulsion mode configurable Master/Slave via PWM configurable
04.8.11	04.9.11	Local/Remote speed setpoint Propulsion mode online activable for Shaft Generators Master/Slave via PWM configurable

Generator Mode: basis software and derived variants

PRIAMOS I I	PRIAMOS III	Note
00.3.13	00.3.13	Generator offset via analogue input Generator mode fixed
00.9.13	00.9.13	Generator offset via analogue input or CAN Generator mode fixed
136.00.02	136.00.02	Generator offset via analogue input Generator mode configurable
139.00.03	139.00.03	Second switchable engine start ramp implemented

Generator Mode: software variants for MAN and MAN licensees

PRIAMOS I II	PRIAMOS III	Note
04.0.47	04.5.47	Generator mode configurable
04.7.04		Generator offset via analogue input or CAN Generator mode fixed Actuator type configurable
04.8.11	04.8.11	Generator offset via analogue input Generator mode online activable for Shaft Generators

External defined generator or propulsion mode: software variant for MAN and MAN licensees

PRIAMOS I II	PRIAMOS III	Note
04.1.04		External speed setpoint calculation Master/Slave via PWM configurable Actuator type configurable

Application/Limitation

Type Approval application/limitation
Priamos I Applicable for combustion engines up to 4000 kW
Priamos II Applicable for combustion engines from 3000 kW to 10.000 kW
Priamos III Applicable for combustion engines from 5000 kW
Priamos III used as governor for Gas Turbines. The system is to be type approved together with the actual Gas Turbine. See DNV GL Pt.4 Ch.3 Sec.2, 3.

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)
- Instrument list
- Test program for certification

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

Programming/configuration to be carried out as listed in document DG 00 002-e/07-00 and FO-TL018-1.

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 DNV GL Pt.4 Ch.9 Sec.1. The certification test is to be performed at the manufacturer of the application system, preferably at the engine maker integrating control&monitoring and safety system, before the system is shipped to the yard. After the certification the clause for application software control will be put into force.

Clause for application software control.
All changes in software are to be recorded as long as the system is in use on board. The records of all changes are to be forwarded to DNV for evaluation and approval.
Major changes in the software are to be approved before being installed in the computer.

Type Approval documentation

-Drawings:
320_90_117_01_MB_DC1-03.pdf
505-00-002-03-b.pdf *
505-00-005-03-h.pdf *
505-00-008-00-h.pdf *
505-00-011-00_00_Stellgerät StG 90-01-24.pdf *
600-00-033-01-0.pdf
* Actuator variants

-Manuals:
DG 07 001-e 05-08 Control devices for conventional injection.pdf
DG 93 101-e 04-06 PRIAMOS I.pdf
DG 95 111-e 06-06 PRIAMOS III.pdf
E 96 001-e 07-04 NG 08.pdf
E 96 003-e 05-06 NG 09.pdf

-SW development:
Fotl018-1_Software-Versionsverwaltung.pdf

-Test reports predecessor:
RMS-3-_94.pdf
RMS_4-03_96001.pdf

-Mercedes Benz
EP_CMS_94201.pdf
EP-CM_96166001.pdf

-Elmac
PRIAMOS-I-II\ELMAC-56049-1-BC.pdf
Renewal/Extension in 2009:

-CD-ROM including:
Descriptions:
DC103_e_Hardware-modifications.pdf

-EMC-Tests:
EMC_KRIWAN_Herberg_DC901-03.pdf
009228_01_g_pb.pdf and 009228_01_g_pb_signature.pdf

-Environmental-Tests:
Environmental_KRIWAN_DC901-03.pdf
PRIAMOS-III\009263_01_h_pb.pdf
PRIAMOS-III\009263_01_h_pb_signature.pdf
Power-Supply-Variation- and High-Voltage-Test:
Power-Test PRIAMOS II_signed.pdf
Power-Test PRIAMOS III_signed.pdf
PRIAMOS and PRIAMOS III Performance Test.pdf

-Specifications and instructions:
DC103_e_Hardware-modifications.pdf
MB-DC-103_Anweisung_ohne_Bremse.doc

-Schematics:
320_90_117_01_MB_DC1-03.pdf
320_90_118_01_CB_DC1-03.pdf

320-00-102-01b.scm.pdf

-System-diagrams:
ESK2293ed.pdf
ESK2292ed.pdf

Renewal in 2013:
Priamos Software Changes 2012 Software Changes DC 1Propulsion mode, dated 2012-12-21
Priamos Software Changes 2012 Software Changes DC 1Generator mode, dated 2012-12-21
Classification TSP FAT Document for SW version 139.00.02, number 625-80-021-02, dated 2012-04-06,

Renewal in 2014:
PRIAMOS_ECU_HardwareChanges_2014 dated 2014-06-02
Priamos Software Changes 2014 (Propulsion and generator mode) dated 2014-07-01

Renewal in 2017:
Compliance Test Reports Dry Heat PB-2017-04-04_DC901-03, PB-2017-04-06_DC1801-04.
PRIAMOS Software Changes, Rev.03, 2016-11-28.

DNV GL Augsburg periodical assessment report, dated 2019-10-24.

Tests carried out
Applicable tests according to DNV GL CG-0339, edition November 2016.

Marking of product
Maker, type designation, serial number.

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

Periodical assessment is to be performed at renewal of this certificate.

END OF CERTIFICATE