DNV·GL

Certificate No:
TAA00000NU

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Programmable Electronic System

with type designation(s)
Sigma Control 2 system: SC2MCS, SC2IOM-1, SC2IOM-2, SC2IOM-3

Issued to
Prodrive Technologies B.V.
Son, **Netherlands**

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.

Location classes:

Temperature	**A**
Humidity	**B**
Vibration	**B**
EMC	**A***
Enclosure	**Required protection according to relevant Rules shall be provided upon installation on board**

***See application/limitation on page 2**

This Certificate is valid until **2022-01-02**.

Issued at **Høvik** on **2016-10-06**

for **DNV GL**

DNV GL local station: **Rotterdam**

Approval Engineer: **Ståle Sneen**

Odd Magne Nesvåg
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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Job Id: **262.1-011630-2**
Certificate No: **TAA00000NU**

Product description

The Sigma Control 2 is a SoftPLC system comprising the following components:

Name	Type
SC2MCS	PLC
SC2IOM-1	I/O module
SC2IOM-2	I/O module
SC2IOM-3	I/O module

SC2MCS

Main processor: 32 bit ARM9 based CPU, 260 MHz
Interfaces: 10/100Base-T Ethernet, RFID MiFare, IOBus RS485 based, 24V DC input power, USS RS485 based, SD Card, AnyBus CompactCom

SC2IOM

Interfaces: IOBus RS485 based, DC output power, Digital Inputs, Digital Relay Outputs, Digital Outputs, Analogue Inputs, Analogue Outputs

Power supply nominal: 24V DC
Degree of protection: IP65 on fronts of MCS, Terminals IP20.

Firmware: U-Boot
Software: Linux OS, SoftPLC

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Product certificate

If specified in the Rules, ref. Pt.4 Ch.9 Sec.1, the control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. The test shall be done according to an approved test program. 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 GL for evaluation and approval. Major changes in the software are to be approved before being installed in the computer.

Application/Limitation

Unit to be supplied from supply unit as per manufacturer's specification.
Ferrite clamps to be mounted as per manufacturer's specification.

The equipment complies with FCC Part 15 subpart C, paragraph 15.225 (a), (b), (c) with regards to the field strength of emissions, and with ETSI EN 302 291-2 V1.1.1 with regards to the radio characteristics.

The equipment is thus approved for maritime installation in category A EMC locations, but it must always be made sure that the EMC environment is sustained and that other equipment is not harmfully affected by the equipment covered by this certificate. In such cases, it is the manufacturer of the wireless equipment’s responsibility to find a solution which maintains the required EMC environment onboard.

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Type Approval documentation

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2015.
ETSI EN 302 291-2 V1.1.1 Clauses 7.1, 7.1.1.2, 7.1.1.4, 7.3, 7.4.3, and 7.4.4.
FCC part 15, subpart C, section 15.225 (a), (b), (c), (d), (e)
FCC part 15, subpart B, section 15.109 (a)

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

Periodical assessment is to be performed at least every second year and at renewal of this certificate.

END OF CERTIFICATE