

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Generator

with type designation(s)

SK 160 Series (1 phase), SK 160 Series (3 phase), IB4 Series (3 phase)

Issued to

SOGA S.p.A.

Montecchio Maggiore VI, Italy

is found to comply with

DNV 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.

Type	Degree of protection	Insulation class	Temp. class (°C)	Voltage (V)	Power (kW)	Frequency (Hz)	Speed (RPM)
SK 160 Series (1 phase)	IP23	H	F	230 / 240	5.5 to 21.5	50 / 60	1500 / 1800
SK 160 Series (3 phase)	IP23	H	F	400 / 450	7 to 38.5	50 / 60	1500 / 1800
IB4 Series (3 phase)	IP23	H	F	400 / 450	20 to 48	50 / 60	1500 / 1800

Issued at **Hamburg** on **2021-10-04**

for **DNV**

This Certificate is valid until **2026-10-03**.

DNV local station: **Rijeka**

Approval Engineer: **Maik Gagern**

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Arne Schaarmann
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

Type SK 160, 1 phase, 4 poles, brushless A.C. generator

Enclosure class:	IP 23
Winding insulation:	Class H
Temperature rise limits:	Class F
Voltage class:	230 / 240 V
Power class:	5,5 to 21,5 kVA
Frequency class:	50 or 60 Hz
Speed:	1500 or 1800 RPM
Ambient temperature:	50 °C

Frame size	Rated power (kVA) 50 Hz (1500 rpm)	Rated power (kVA) 60 Hz (1800 rpm)
SK 160 SZ 1	5,5	7
SK 160 SA 1	7,5	9,5
SK 160 CA 1	9,5	11,5
SK 160 CB 1	11,5	14
SK 160 MA 1	14,5	17,5
SK 160 LA 1	17,5	21,5

Type SK 160, 3 phase, 4 poles, brushless A.C. generator

Enclosure class:	IP 23
Winding insulation:	Class H
Temperature rise limits:	Class F
Voltage class:	400 / 450 V
Power class:	7 to 38,5 kVA
Frequency class:	50 or 60 Hz
Speed:	1500 or 1800 RPM
Ambient temperature:	50 °C

Frame size MJB	Rated power (kVA) 50 Hz (1500 rpm)	Rated power (kVA) 60 Hz (1800 rpm)
SK 160 SA	7	8,5
SK 160 CA	9	11
SK 160 CB	11	13,5
SK 160 MA	14	17
SK 160 MB	16	19,5
SK 160 LA	20	24
SK 160 LB	24	29
SK 160 WA	29	35
SK 160 WB	32	38,5

Type IB 4, 3 phase, 4 poles, brushless A.C. generator

Enclosure class:	IP 23
Winding insulation:	Class H
Temperature rise limits:	Class F
Voltage class:	400 / 450 V
Power class:	20 to 48 kVA
Frequency class:	50 or 60 Hz
Speed:	1500 or 1800 RPM
Ambient temperature:	50 °C

Frame size	Rated power (kVA) 50 Hz (1500 rpm)	Rated power (kVA) 60 Hz (1800 rpm)
IB4 SA	20	24
IB4 SB	24	29

Frame size	Rated power (kVA) 50 Hz (1500 rpm)	Rated power (kVA) 60 Hz (1800 rpm)
IB4 MA	29	35
IB4 MB	36	43
IB4 LA	40	48

Application/Limitation

Approved for installation onboard ships and mobile offshore units in non-hazardous areas.

The generator must be regarded as a component. The voltage regulator type "BL4 U v.4" is a part of this type approval. However, the end user / system responsible must insure, that the generator including the voltage regulator fulfills the DNV GL Rules Pt.4 Ch.8 Sec.5.

Type Approval documentation

Z66136E - SINCRO - MARINE generators series - Technical description - i.01
IB4 LA-code-102205-SerNo-1415967-type test report
SK160 LA1-code-1154575-SerNo-1458225-type test report
SINCRO - MARINE generators series - Test programme - i.01_03.2021

Tests carried out

Acc. to DNV GL Class Program DNVGL-CP-0393, Edition 2015

Marking of product

The products to be marked with:

- Manufacturer name
- Model name
- Serial number
- voltage– frequency - speed - power class (kW / kVA) - winding insulation class
- Degree of protection

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE