TYPE-CERTIFICATE DATA SHEET

No. E.251

for
ENGINEUS100 ENGINE SERIES

Type Certificate Holder
Safran Electrical & Power S.A.

Rue Louis Bleriot 1
31702, Blagnac Cedex
France

For Models: ENGINeUS100B1

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I. General

1. Type/ Model/ Variants

Type: ENGINeUS100 Series

Model: ENGINeUS100B1.
This model is approved for use on single-engine civil aeroplane at the ratings and within the operating limitations specified below, subject to compliance with the powerplant installation requirements appropriate to approved installations.

2. Type Certificate Holder

Safran Electrical & Power S.A.

1 rue Louis Bleriot
31702, Blagnac Cedex
France

Design Organisation Approval number : EASA.21J.778

3. Manufacturer

Safran Electrical & Power S.A.

4. Date of Application

ENGINeUS100B1	24 March 2023

5. EASA Type Certification Date

ENGINeUS100B1	24 January 2025

II. Certification Basis

1. State of Design Authority Certification Basis

N/A

2. Reference Date for determining the applicable airworthiness requirements

ENGINeUS100B1	24 March 2023

3. EASA Certification Basis

3.1. Airworthiness Standards

There is no existing Airworthiness Standard applicable to electric engine. Applicable requirements have been established in a Special Condition.

3.2. Special Conditions (SC)

SC E-19 Electric/Hybrid Propulsion System Issue 01, effective 07 April 2021.

3.3. Equivalent Safety Findings

None

3.4. Deviations

None

3.5. Environmental Protection

Not applicable for electric engine

III. Technical Characteristics

1. Type Design Definition

ENGINeUS100B1	FG0000003B1AY03

2. Description

The ENGINeUS100 engine series are electric engines composed of an electric motor (permanent magnet type) and power electronic integrated into one single product. The power electronic ensures the functions of inverter and control system.
The ENGINeUS100 engine series are air cooled engines. The heatsinks and fins are open to external airflow provided by propeller rotation and airspeed dynamic pressure.
The design is fully structural to transmit all propeller loads to the airframe via 6 mountings points. The engine shaft has a direct interface with the propeller with 6 attachments points.

3. Equipment

None

4. Dimensions

	Maximum diameter (mm)	Maximum length (mm)
ENGINeUS100B1	394	354

5. Dry Weight

	Weight (kg)
ENGINeUS100B1	51,6 +1/-0,5

6. Ratings

6.1. All Channels Operative

	Maximum Continuous Power MCP	Maximum Take-Off Power (5min) TOP
ENGINeUS100B1	114 kW	125 kW

MCP, minimum power of 114kW, is ensured in speed range of [1907 – 2300] rpm.
TOP, minimum power of 125kW, is ensured in speed range of [1990 – 2300] rpm.

6.2. Half Engine Inoperative – Single Fault Ratings

	Emergency Continuous Duration Power ECDP	Emergency Short Duration Power (4min) ESDP
ENGINeUS100B1	57 kW	74 kW

ECDP, minimum power of 57kW, is ensured in speed range of [1773 – 2130] rpm.
ESDP, minimum power of 74kW, is ensured in speed range of [1936 – 2130] rpm.

7. Control System

The control system is composed of 2 control channels (COM) and one independent monitoring channel (MON).
The control system is fully integrated in the engine. Its definition is frozen by the Type Design Definition listed under paragraph III 1.

8. Fluids (Fuel, Oil, Coolant, Additives)

Minimum airflow to be provided is specified in the Engine Installation and Operating Manual.

9. Aircraft Accessory Drives

None

10. Maximum Permissible Air Bleed Extraction

None

11. Efficiency

The engine efficiency is defined in the Engine Installation and Operating Manual.

IV. Operating Limitations

1. Installation Assumptions

	Aircraft	Note
ENGINeUS100B1	Diamond DA 40 EP	In accordance with the instructions and limitations provided in the Engine Installation and Operating Manual ENGINEUS-00474-00.

2. Operating envelope

2.1. Outside Air Temperature

Minimum Outside Air Temperature: -40°C
Maximum Outside Air Temperature: ISA+23°C limited to +38°C

2.2. Altitude

Maximum altitude: 15 000ft

3. Temperature Limits

ENGINeUS100B1 rating	TOP	MCP	ESDP	ECDP
Maximum Motor temperature (°C)	185	185	240	185
Maximum Power Electronic temperature (°C)	80	80	82	80
Maximum initial Motor temperature (°C)	70	None	105	None
Maximum initial Power Electronic temperature (°C)	70	None	75	None

4. Maximum Permissible Rotor Speeds

ENGINeUS100B1 rating	TOP	MCP	ESDP	ECDP
Speed limit (rpm)	2306	2306	2136	2136

5. Torque Limits

ENGINeUS100B1 rating	TOP	MCP	ESDP	ECDP
Torque limit (N.m)	644	613	397	336,4

6. Voltage Limits

	ENGINeUS100B1
High Voltage input range in operation (Vdc)	[510 – 756,5]

7. Pressure Limits

Not applicable

8. Oil capacity, consumption limit

Not applicable

V. Operating and Service Instructions

Manuals	Installation and Operating Manual
ENGINeUS100B1	ENGINEUS-00474-00

The Instructions for Continued Airworthiness are provided in the following manuals

Instructions for Continued Airworthiness	Engine Maintenance Manual (EMM)	Life Limits and Schedule Manual (LLSM)	Engine Standard Practices Manual (ESPM)	Engine internal Repair Manual (EIRM)	Installation and Operating Manual
ENGINeUS100B1	68-10-10	05-10-10	68-00-00	68-00-10	ENGINEUS-00474-00

VI. Notes

1. ENGINeUS100B1 engine is certified according to Airworthiness requirements of SC E-19 EHPS.280 for inadvertent icing or snow conditions encounter.

2. ENGINeUS100B1 is not qualified according to DO-160 section 23 Lightning Direct.

3. ENGINeUS100B1 is not certified for hail and bird impact.

4. ENGINeUS100B1 shall be installed in a Fire Withstanding Zone. Corresponding installation assumptions are defined in the Installation and Operating Manual.

5. ENGINeUS100B1 software has been validated in accordance with the requirements of ED-12C / DO-178C guidelines for a level C software.

6. The operating / starting / relight envelopes of ENGINeUS100B1 are provided in the Installation and Operating Manual.

7. Qualified environmental conditions of the ENGINeUS100B1, including EMI and HIRF, are detailed in the Installation and Operating Manual.

8. ENGINeUS100B1 is not certified for operations under the concept of Time Limited Dispatch according to EHPS.355.

SECTION: ADMINISTRATIVE

I. Acronyms and Abbreviations

DOA: Design Organisation Approval
ECDP: Emergency Continuous Duration Power
EECU: Electronic Engine Control Unit
EHPS: Electric/Hybrid Propulsion System as defined in SC E-19
EMI: Electromagnetic Interference
ESDP: Emergency Short Duration Power
HEI: Half Engine Inoperative
HIRF: High Intensity Radiated Fields
ISA: International Standard Atmosphere
MCP: Maximum Continuous Power
PE: Power Electronic
TOP: Take-Off Power

II. Type Certificate Holder Record

Safran Electrical & Power S.A.
1 rue Louis Bleriot
31702, Blagnac Cedex
France

III. Change Record

Issue	Date	Changes	TC issue
Issue 01	24 January 2025	Initial Issue	Initial Issue, 24 January 2025
Issue 02	17 February 2025	Update of Paragraph VI Notes to correct a typo on the DO-160 version. Issue C is the correct one.	

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