Civil Aviation Authority
United Kingdom

TYPE-CERTIFICATE DATA SHEET

UK.TC.E.00127

for

PW1100G-JM Series Engines

Type Certificate Holder

International Aero Engines (IAE), LLC

400 Main Street

East Hartford, CT 06118

United States of America

Model(s):

PW1133G-JM
PW1133GA-JM
PW1130G-JM
PW1127G-JM
PW1127GA-JM
PW1127G1-JM
PW1124G-JM
PW1124G1-JM
PW1122G-JM
PW1431G-JM
PW1129G-JM
PW1431GA-JM
PW1431GH-JM
PW1428G-JM
PW1428GA-JM
PW1428GH-JM

Issue: 01

Date of issue: 13 November 2024

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Section 1 General (All Models)

I. General

This Type-Certificate Data Sheet (TCDS) is the concise definition of the type-certificated product accepted and or approved by the CAA in the UK for the affected types and models.

This TCDS includes:

1. Details of the type design that affect the TCDS that have been approved or accepted by the CAA in the UK from 01 January 2021.

2. Details of the type design that affected the TCDS and were approved or accepted by EASA before 01 January 2021, and were incorporated into EASA TCDS IM.E.093 at Issue 07 dated 09 December 2019 and are therefore accepted by the UK under Article 15 of Annex 30 of the UK-EU Trade and Cooperation Agreement.

Section 2 PW1100G-JM Series Engines

I. General

1. Type / Variant or Model

Type	Models
PW1100G-JM	PW1133G-JM
	PW1133GA-JM
	PW1130G-JM
	PW1127G-JM
	PW1127GA-JM
	PW1127G1-JM
	PW1124G-JM
	PW1124G1-JM
	PW1122G-JM
	PW1431G-JM
	PW1129G-JM
	PW1431GA-JM
	PW1431GH-JM
	PW1482G-JM
	PW1482GA-JM
	PW1428GH-JM

2. Type Certificate Holder

International Aero Engines, LLC
400 Main Street
East Hartford, CT 06118
United States of America

3. Manufacturer

International Aero Engines, LLC
400 Main Street
East Hartford, CT 06118
United States of America

4. Date of Application at FAA (Certificating Authority)

Models	**Issued/Amended date**
PW1133G-JM	15 December 2011
PW1133GA-JM	12 June 2015
PW1130G-JM	15 December 2011
PW1127G-JM	15 December 2011
PW1127GA-JM	12 June 2015
PW1127G1-JM	15 December 2011
PW1124G-JM	15 December 2011
PW1124G1-JM	15 December 2011
PW1122G-JM	15 December 2011
PW1431G-JM	20 January 2015
PW1129G-JM	11 April 2017
PW1431GA-JM	03 October 2017
PW1431GH-JM	03 October 2017
PW1482G-JM	03 October 2017
PW1482GA-JM	03 October 2017
PW1428GH-JM	03 October 2017

5. Type Certification date at FAA (Certificating Authority)

Models	Issued/Amended date
PW1133G-JM	19 December 2014
PW1133GA-JM	23 October 2015
PW1130G-JM	23 October 2015
PW1127G-JM	23 October 2015
PW1127GA-JM	23 October 2015
PW1127G1-JM	16 August 2023
PW1124G-JM	23 October 2015
PW1124G1-JM	23 October 2015
PW1122G-JM	23 October 2015
PW1431G-JM	06 May 2016
PW1129G-JM	29 May 2018
PW1431GA-JM	29 May 2018
PW1431GH-JM	29 May 2018
PW1482G-JM	29 May 2018
PW1482GA-JM	29 May 2018
PW1428GH-JM	29 May 2018

6. Date of Application at CAA (Validating Authority)

Models	Application Date
PW1133G-JM	18 July 2024
PW1133GA-JM	18 July 2024
PW1130G-JM	18 July 2024
PW1127G-JM	18 July 2024
PW1127GA-JM	18 July 2024
PW1127G1-JM	18 July 2024
PW1124G-JM	18 July 2024
PW1124G1-JM	18 July 2024
PW1122G-JM	18 July 2024
PW1431G-JM	18 July 2024
PW1129G-JM	18 July 2024
PW1431GA-JM	18 July 2024
PW1431GH-JM	18 July 2024
PW1482G-JM	18 July 2024
PW1482GA-JM	18 July 2024
PW1428GH-JM	18 July 2024

Application for CAEP/11 Compliance.

7. Type Certification date at CAA (Validating Authority)

Models	Approval Date
PW1133G-JM	12 November 2024
PW1133GA-JM	12 November 2024
PW1130G-JM	12 November 2024
PW1127G-JM	12 November 2024
PW1127GA-JM	12 November 2024
PW1127G1-JM	12 November 2024
PW1124G-JM	12 November 2024
PW1124G1-JM	12 November 2024
PW1122G-JM	12 November 2024
PW1431G-JM	12 November 2024
PW1129G-JM	12 November 2024
PW1431GA-JM	12 November 2024
PW1431GH-JM	12 November 2024
PW1482G-JM	12 November 2024
PW1482GA-JM	12 November 2024
PW1428GH-JM	12 November 2024

Application approval for CAEP/11 compliance.

II. Certification Basis

1. Reference Date for determining the applicable airworthiness requirements.

15 December 2011

2. State of Design Airworthiness Authority Type Certification Data Sheet Number

FAA ETCDS E00087EN Revision 6 and later approved issue

3. State of Design Airworthiness Authority Certification Basis

Refer to FAA TCDS E00087EN

4. UK CAA Certification Basis

4.1 Airworthiness Standards

CS-E Amendment 3, dated 23 December 2010 (Decision no. 2010/015/R of the Executive Director of the European Aviation Safety Agency)

4.2 Special Conditions (SC)

None

4.3 Equivalent Safety Findings (ESF)

CS-E 790(a)(1)	Ingestion of Rain and Hail – Large hailstone ingestion
CS-E 800(d)	Bird Strike and Ingestion – Medium and small birds ingestion tests

4.4 Deviations

None

4.5 Environmental Protection

Models	Applicable Requirement
PW1133G-JM PW1133GA-JM PW1130G-JM PW1127G-JM PW1127GA-JM PW1127G1-JM PW1124G-JM PW1124G1-JM PW1122G-JM PW1431G-JM PW1129G-JM PW1431GA-JM PW1431GH-JM PW1482G-JM PW1482GA-JM PW1428GH-JM	CS-34 Amendment 3 as implemented by ED Decision 2019/014/R (29th July 2019); ICAO Annex 16 Volume II, Amendment 9 (1st January 2018) as implemented into EU legislation 11/09/2018; NOx levels in compliance with Part III, Chapter 2, paragraph 2.3.2e) (CAEP/8) of the above mentioned Annex. Maximum nvPM mass concentration levels in compliance with Part III, Chapter 4, and paragraph 4.2.2 (CAEP/10) of the above mentioned Annex
PW1133G-JM, PW1133GA-JM, PW1130G-JM, PW1129G-JM, PW1127G-JM, PW1127GA-JM, PW1127G1-JM, PW1127G1A-JM, PW1127G1B-JM, PW1124G-JM, PW1124G1-JM, and PW1122G-JM	In accordance with Article 9 of Assimilated Regulation (EU) 2018/1139, as amended, meeting the requirement of ICAO Annex 16 Volume II, Amendment 10 applicable 01 January 2021. NOx standard in accordance with ICAO Annex 16 Volume II, Part III, Chapter 2, $ 2.3.2 e) (CAEP/8). Maximum nvPM mass concentration levels in compliance with ICAO Annex 16 Volume II, Part III, Chapter 4, paragraph 4.2.2.1 nvPM mass and number emissions in compliance with Part III, Chapter 4, paragraph 4.2.2.2 a) 1) and 4.2.2.2 b) 1) (CAEP/11 In-Production standard.

III. Technical Characteristics

1. Type Design Definition

PW1100G-JM: Installation Drawing 5320001

PW1400G-JM: Installation Drawing 5330001

2. Description

High bypass ratio, axial-airflow, dual-spool, turbofan engine controlled by a Full Authority Digital Engine Control (FADEC). The low-pressure spool consists of a three-stage low pressure turbine that drives a three- stage low pressure compressor, and a single stage high bypass ratio fan drive gear speed reduction system. The high-pressure compressor has eight axial stages driven by a two-stage cooled high pressure turbine.

3. Equipment

See III. 1. Type Design Definition

4. Dimensions

Overall Length (flange to flange):	3.284 m (129.285 inches) +/- 0.001 m (0.051 inches)
Overall Length (fan spinner face to aft flange):	3.401 m (133.898 inches)
Nominal diameter (fan case):	2.224 m (87.566 inches)
Maximum radial projection (at drain mast):	1.274 m (50.150 inches)

5. Dry Weight

2857.6 kg (6300 lbs)

The PW1100G-JM dry weight is defined as the dry weight of the basic engine and include the IAE, LLC supplied engine build-up component (EBU1). EBU1 components include Low Oil Pressure Switch, Core Nacelle Temperature Sensor, Gearbox Breather Tube, Engine Air Turbine Starter, starter attachment hardware and seals to gearbox, duct from starter-to-Starter Air Valve, Starter Air Valve, electrical harnesses, Mass Fuel Flow Meter, environmental control system Intermediate Pressure Check Valve.

The PW1400G-JM engine weight is defined as the dry weight of the basic engine with standard equipment only.

6. Ratings

The engine ratings are based on calibrated test stand performance under the following conditions:

- Sea level static, standard pressure 1.01 bar (14.696 psia), up to the flat rating ambient temperature.
- No customer bleed or customer horsepower extraction.
- Ideal inlet, 100% ram recovery.
- Production aircraft flight cowling.
- Production instrumentation.
- Fuel lower heating value 42798 kJ/kg (18400 BTU/lb).

Model	Sea Level Static Thrust	
	Take-Off (5 min.)	Maximum Continuous
PW1133G-JM	147.28 kN (33110 lbf)	145.81 kN (32780 lbf)
PW1133GA-JM	147.28 kN (33110 lbf)	145.81 kN (32780 lbf)
PW1130G-JM	147.28 kN (33110 lbf)	145.81 kN (32780 lbf)
PW1127G-JM	120.43 kN (27075 lbf)	117.18 kN (26345 lbf)
PW1127GA-JM	120.43 kN (27075 lbf)	117.18 kN (26345 lbf)
PW1127G1-JM	120.43 kN (27075 lbf)	117.18 kN (26345 lbf)
PW1124G-JM	107.82 kN (24240 lbf)	106.91 kN (24035 lbf)
PW1124G1-JM	107.82 kN (24240 lbf)	106.91 kN (24035 lbf)
PW1122G-JM	107.82 kN (24240 lbf)	106.91 kN (24035 lbf)
PW1431G-JM	140.39 kN (31572 lbf)	138.19 kN (31068 lbf)
PW1129G-JM	130.00 kN (29245 lbf)	117.19 kN (26345 lbf)
PW1431GA-JM	140.44 kN (31572 lbf)	138.20 kN (31068 lbf)
PW1431GH-JM	140.44 kN (31572 lbf)	138.20 kN (31068 lbf)
PW1428G-JM	132.38 kN (29761 lbf)	126.55 kN (28450 lbf)
PW1428GA-JM	132.38 kN (29761 lbf)	126.55 kN (28450 lbf)
PW1428GH-JM	132.38 kN (29761 lbf)	126.55 kN (28450 lbf)
-Flat rating ambient temperature Take-off: 30°C/86°F for models PW1133G-JM, PW1133GA-JM, PW1130G-JM, PW1431G-JM, PW1428G-JM, PW1428GA-JM, PW1428GH-JM, PW1431GA-JM, PW1431GH-JM 47°C/117°F for models PW1127G-JM, PW1127GA-JM and PW1127G1-JM 51°C/123°C for models PW1124G-JM, PW1124G1-JM and PW1122G-JM 44°C/111°F for PW1129G-JM -Flat rating ambient temperature Maximum Continuous: 25°C/77°F for all models		

7. Control System

Model	Data Storage Unit (Rating Plug) P/N
PW1133G-JM	5322188 or 5325241
PW1133GA-JM	5322195 or 5325243
PW1130G-JM	5322189 or 5325245
PW1127G-JM	5322191 or 5325246
PW1127GA-JM	5322196 or 5325242
PW1127G1-JM	5322190 or 5325249
PW1124G-JM	5322193 or 5325248
PW1124G1-JM	5322192 or 5325247
PW1122G-JM	5322194 or 5325244
PW1431G-JM	5324037
PW1129G-JM	5325964
PW1431GA-JM	5313531
PW1431GH-JM	5327152
PW1428G-JM	5313532
PW1428GA-JM	5327153
PW1428GH-JM	5327151

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

Fuel: Service Bulletin PW1000G-1000-73-00-0002-00A-930A-D defines the fuel requirements and provides a listing of approved fuels and fuel additives.

Oil: Service Bulletin PW1000G-1000-79-00-0002-00A-930A-D provides a listing of approved turbine oils.

9. Aircraft Accessory Drives

ALL models except for the PW1100G-JM:

Drive	Rotation	Speed Ration to N2	Torque Nm (Ib.-in.)			Overhung Moment Nm (Ib.-in.)
			Continuous	Overload	Static	
Hydraulic Pump	CCW*	0.1768.1	146.9 (1300)	203.3 (1800)	480.1 (4250)	45.1 (400)
Integrated Drive Generator (IDG)	CCW*	0.3932:1	224.8** (1990)	505.6 (4475)	1062 (9400)	101.6 (900)
Air Turbine Starter	CCW*	0.407:1	-	1208 (10692)	1026.3 (90284)	280 (31.6)
*: Counterclockwise (facing the drive pad) **: maximum allowable continuous torque values are at any engine speed unlee otherwise specified provided no destructive forces resulting from accessory torsional vibration are present.						

PW1400G-JM:

Drive	Rotation	Speed Ration to N2	Torque Nm (lb.-in.)			Overhung Moment Nm (lb.-in.)
			Continuous	Overload	Static	
Hydraulic Pump	CCW*	0.1763.1	146.9 (1300)	203.3 (1800)	480.1 (4250)	45.1 (400)
Variable Frequency Drive Generator (VFG)	CCW*	0.9611:1	112.9 (1000)**	146.9 (1300)	864.8 (7655)	144.0 (1275)
Air Turbine Starter	CCW*	0.407:1	-	1208 (10692)	1026.3 (90284)	280 (31.6)
*: Counterclockwise (facing the drive pad) **: maximum allowable continuous torque values are at any engine speed unless otherwise specified provided no destructive forces resulting from accessory torsional vibration are present.						

10. Maximum Permissible Air Bleed Extraction

Customer ECS/WAI: 18.2%

W25 Nacelle Anti Ice: 1.2% W25

IV. Operating Limitations

1. Temperature Limits

Maximum permissible Indicated Turbine Temperatures (ITT), °C(°F):

Take-Off (5 minutes) *	Maximum Continuous	At start-up
1083 (1982)	1043 (1909)	1083 (1982)
*: The normal 5-minute takeoff rating may be extended to 10 minutes for engine out contingency.		

Fuel Temperatures:

Refer to Installation and Operating manual, paragraph V refers.

Oil Temperatures:

For continuous operation, engine main oil temperature maximum limit varies with engine power level. The limit decreases from 152°C (305°F) at idle power to 146°C (295°F) at cruise power and to 141°C (285°F) at high power. See Installation and Operating Manual for details, paragraph V refers.

Minimum oil temperature at idle, before take-off power operation: 51.7°C (125°F)

2. Speed Limits

Lower Pressure Rotor (N1) rpm			High Pressure Rotor (N2) rpm		
Maximum permissible	Minimum at Ground Idle	Minimum at Flight Idle	Maximum Permissible	Minimum at Ground Idle	Minimum at Flight Idle
10047	1750	1801	2230	12400	12400

Notes

- Power setting, power checks, and control of engine thrust output in all operations are based on Low Rotor Speed (N1). The Fan Speed (NFAN) is directly proportional to n1 by a gear ration of 1:3.0625.
- The minimum N1 certified for in-flight operation in icing conditions is 1801 rpm. The Electronic Engine Control will prevent rotor speeds below this value while in flight.

3. Torque Limits.

N/A

4. Pressure Limits

4.1 Fuel Pressure

Fuel pressure at the engine fuel pump inlet during operation shall be maintained at not less than 34.47 kPa (5 psi) above the vapour true pressure of the fuel but not greater than 689.47 kPa (100 psi) above the absolute ambient pressure with a vapour/liquid ratio of zero. The maximum allowable pressure at the fuel pump inlet after shutdown is 834.2 kPa (121 psig).

4.2 Oil Pressure

Oil Inlet Pressure Limits:

Minimum: 434.3 kPa (63 psig) at idle. Variable by N2 Speed of idle. See Installation and Operating Manual for details, paragraph V refers.

Maximum: 1861.5 kPa (270 psig).

Oil pressure is measured relative to main lube pressure. Temporary interruption associated with negative “g” operation is limited to 10 seconds maximum. Normal oil pressure will be restored rapidly once the negative “g” effect has been eliminated.

5. Time Limited Dispatch (TLD)

The PW1100G-JM engine models are approved for TLD in accordance with CS-E 1030. FADEC system faults fall into 4 categories as follows: A) No Dispatch, B) Short Term Dispatch, C) Long Term Dispatch or D) Fix at an Operators Discretion. Details on the short- and long-term dispatch intervals are provided in the Airworthiness Limitations Manual PN 5316993.

The PW1400G-JM engine models are not approved for TLD.

6. ETOPS

When compliant with Pratt & Whitney Service Bulletin PW1000G-C-72-00-0056-00A-930A-D latest approved revision, all PW1100G-JM models are approved for ETOPS capability in accordance with

CS-E 1040 Amendment 3 for a Maximum Approved Diversion Time of 180 minutes at MCT thrust plus 15 minutes at hold power. ETOPS does not require any special engine limitation, marking placard or configuration other than as instructed by Pratt & Whitney Service Bulletin PW1000G-C-72-00-0056-00A-

930A-D latest approved revision. This approval does not constitute an approval to conduct ETOPS operations.

The PW1400G-JM engine models are not eligible for Extended Operations (ETOPS).

V. Operating and Service Instructions

Engine Maintenance Manual:	PN 5316994 for all PW1100G-JM models
Engine Manual:	PN 5316992 for all PW1100G-JM models
Airworthiness Limitations Manual:	PN 5316993 for all PW1100G-JM models
Clean, Inspect and Repair Manual:	PN 5315653 for all PW1100G-JM models.
Installation and Operating Manual:	PWA-9851 for all PW1100G-JM models
	PWA-9914 for all PW1400G-JM models

The Instructions for Continued Airworthiness (ICA) for the PW1400G-JM models are not completed yet and any aircraft with that engine installed is not eligible for airworthiness certification.

VI. Notes

Note 1: For all PW1100G-JM models, engine mount system provisions are specified in Installation Drawing 5320001 and Mount and Manoeuvre Load Drawing, 5320003.
For all PW1400G-JM models, engine mount system provisions are specified in Installation Drawing 5330001 and Mount and Manoeuvre Load Drawing, 5330003.

Note 2: Engine design and operating limitations are defined in the Installation and Operating Manual, paragraph V refers.

Note 3: Electromagnetic compatibility (EMC) protection requirements and electromagnetic interference (EMI) emitted by the electronic engine control system, including cables, are specified in the Installation and Operating Manual, paragraph V refers.

Note 4: Requirements and limitations for ground operation in icing conditions are specified in the Installation and Operating Manual, paragraph V refers.

Note 5: For all PW1100G-JM models, the EASA approved (prior to 31 December 2020) Airworthiness Limitations Section of the Instructions for Continued Airworthiness is published in the PW1100G-JM Airworthiness Limitation Manual PN 5316993, for all PW1400G-JM models in Report PWA-9913. Further updates in these documents may be accepted by the UK CAA under the IPA between FAA and UK CAA.

Note 6: For all PW1100G-JM models, the UT Aerospace System- Aerostructures Thrust Reverser Unit as specified in the Installation and Operating Manual, PWA-9851, is acceptable for use with the engine. The thrust reverser is not part of the engine type design and is certified as part of the aircraft.
For the PW1400G-JM engine models, the Shorts Brother's Thrust Reverser Unit as specified in the Installation and Operating Manual, PWA-9914, is acceptable for use with the engine. The thrust reverser is not part of the engine type design and is certified as part of the aircraft**.**

Section 3 Administration

I. Acronyms and Abbreviations

Acronym / Abbreviation	Definition
ETCDS	Engine Type Certificate Data Sheet
CAEP	Committee on Aviation Environmental Protection
CS-E	Certification Specifications Engines
ECS	Environmental Control System
ETOPS	Extended Range Operation with Two-Engine Aeroplanes
FAA	Federal Aviation Administration
FADEC	Full Authority Digital Engine Control
ICAO	International Civil Aviation Organisation
MCT	Maximum Continuous
PN	Part Number
W25	Core Engine Air Mass Flow
WAI	Wing Anti-Ice

II. Type Certificate Holder Record

TCH Record	Period
International Aero Engines (IAE), LLC 400 Main Street East Hartford, CT 06118 United States of America	Since initial issue

III. Amendment Record

TCDS Issue No.	TCDS Issue Date	Changes	TC Issue and Date
01	13 Nov 2024	- Section 1 is added to provide explanatory notes about the details of the type design that affect the TCDS, that have been approved or accepted by the CAA in the UK from 01 January 2021 and that the design changes accepted by EASA before 01 January 2021 were incorporated into EASA TCDS IM.E.093 at Issue 07 dated 09 December 2019 and are therefore accepted by the UK under Article 15 of Annex 30 of the UK-EU Trade and Cooperation Agreement. - Section 2 (II) (1), (2), (3), and (4) added to provide information about certifying authority and certification basis applied by the certificating authority. - Section 2 (II) (4.5) updated with regards to the compliance with applicable engine emissions requirements (CAEP/11) according to Annex Part 21.B.85 (UK CAA major change approval UK.MAJ.00410).	Issue 01 13 Nov 2024

– END –