This Data Sheet which is a part of **Type Certificate No. F 56-35** prescribes conditions and limitations under which the product, for which the Type Certification was issued, meets the airworthiness requirements of the Federal Aviation Regulations.

Type Certificate Holder

Pilatus Aircraft Ltd.
P.O. Box 992
CH - 6371 Stans
SWITZERLAND

Model Designation

Pilatus PC-21 (Acrobatic and Utility Categories).
Multipurpose low-wing monoplane with a stepped, tandem-seat pressurized cockpit, powered by a single engine turboprop engine with full acrobatic capability.

Type: **Pilatus PC-21**
Variant: **Pilatus PC-21**

Airworthiness Category:

US 14 CFR Part 23 ("FAR 23") Acrobatic Category
US 14 CFR Part 23 ("FAR 23") Utility Category

Date of Type Certificate

Acrobatic Category: December 23, 2004
Utility Category: December, 15, 2010

Technical Data

Engine

Pratt & Whitney Canada PT6A-68B turboprop engine
TCA TC E24

Fuel

Acceptable fuels according to Pratt & Whitney Canada Specification (P&WC Service Bulletin No. 18104)

Oil (Engine and Gearbox)

Oils meeting the requirements of specification MIL-L-23699, Type II (5 Centistokes) or specification PWA521, Type II (5 Centistokes), are fully approved (P&WC Service Bulletin 18101).

Engine Limits

SHP Limits (1)
- Take-off/Max Cont: up to 1600 SHP (1194 kW) at high airspeed
  1080 SHP (805 kW) at low airspeed
- Max. Climb/Cruise: 1425 SHP (1063 kW) at high airspeed
  962 SHP (717 kW) at low airspeed

(1) Automatic limiting of the SHP as a function of airspeed.

Oil Temperature Limits

- Engine starting: to be above minus 40°C
- Take-off/Max Cont: 10°C to 105°C (10 minutes 105°C to 110°C)
- Max. Climb/Cruise: 10°C to 105°C (10 minutes 105°C to 110°C)

Propeller and Propeller Limits

The propeller is a variable pitch, feathering propeller, non reversing with composite blades, aluminum hub and composite spinner.

Type: HC-E5A-2 hub with 5 Hartzell E9193B or E9193K blades, constant speed type

FAA TC P20NE

Propeller Diameter: 238.8 cm (94“)

Pitch settings at: (measured at 30 inch station)

- Minimum pitch: 12°
- Feathered: 86°

Underwing Stores

The PC-21 may carry one of the following underwing stores configurations at the inboard and/or outboard pylon stations:

Underwing Stores Configuration 1:

- Two External Smoke Generators (ESG) at inboard station

Underwing Stores Configuration 2:

- Two Underwing Fuel Tanks (UWT) at inboard station

Underwing Stores Configuration 3:

- Two Underwing Fuel Tanks (UWT) at inboard station; and
- Two External Smoke Generators (ESG) at outboard station

Underwing Stores Configuration 4:

- Two External Smoke Generators (ESG) at outboard station

Airspeed Limits (EAS)

Equivalent Air Speeds (EAS) at maximum operating weights in <u>Acrobatic and Utility Category:</u>

Max. operating speed (VMO)	370kt
Max. operating Mach no. (MMO)	0.72 M
Design diving speed (VD)	420kt
Design diving Mach no. (MD)	0.77 M
Design cruising speed (VC)	370 kt
Maneuvering speed (VO) ailerons	370 kt
Maneuvering speed (VO) rudder, elevator	220 kt
Max. speed with flaps and/or landing gear extended (VFT,VFL,VLE)	180 kt

Maneuvering Load Factor Limits (g)

In the Acrobatic Category (clean wing and underwing stores in configuration 1 and 4)

Max. positive	+ 8.0 g
Max. negative	- 4.0 g

In the Utility Category (underwing stores in configuration 2 and 3)

Max. positive	+ 5.0 g
Max. negative	- 2.5 g

With flaps extended in take-off or land position

Max. positive	+ 4.0 g
Max. negative	0 g

Center of Gravity Limits

In the Acrobatic Category, clean

[% MAC] with a straight line variation in between

Forward CG Gear Down	Forward CG Gear Up	Aft CG	at weight
19.5 %	20 %	24 %	2,330 kg (5,136 lbs)
¦	¦	28 %	2,450 kg (5,401 lbs)
19.5 %	20 %	¦	2,750 kg (6,062 lbs)
21 %	21.5 %	¦	3,000 kg (6,613 lbs)
21.5 %	21.5 %	¦	3,000 kg (6,613 lbs)
24 %	24 %	28 %	3,100 kg (6,834 lbs)

In the Acrobatic Category, with underwing stores configuration 1

[% MAC] with a straight line variation in between

Forward CG Gear Down	Forward CG Gear Up	Aft CG	at weight
19.5 %	20 %	24 %	2,330 kg (5,136 lbs)
¦	¦	28 %	2,450 kg (5,401 lbs)
19.5 %	20 %	¦	2,750 kg (6,062 lbs)
21 %	21.5 %	¦	3,000 kg (6,613 lbs)
21.5 %	21.5 %	¦	3,000 kg (6,613 lbs)
22 %	22 %	28 %	3,100 kg (6,834 lbs)

In the Utility Category, with underwing stores configuration 2

[% MAC] with a straight line variation in between

Forward CG Gear Down	Forward CG Gear Up	Aft CG	at weight
19.5 %	20 %	24 %	2,330 kg (5,136 lbs)
¦	¦	28 %	2,450 kg (5,401 lbs)
19.5 %	20 %	¦	2,750 kg (6,062 lbs)
¦	¦	28 %	3,100 kg (6,834 lbs)
20 %	20.5 %	¦	3,320 kg (7,319 lbs)
20.5 %	21 %	¦	3,480 kg (7,672 lbs)
23.2 %	23.7 %	27 %	3,600 kg (7,936 lbs)

In the Utility Category, with underwing stores configuration 3
[% MAC] with a straight line variation in between

Forward CG		Aft CG	at weight
Gear Down	Gear Up		
21.2 %	21.5 %	28 %	2,555 kg (5,633 lbs)
21.3 %	21.5 %	28 %	3,400 kg (7,496 lbs)
22.1 %	22.3 %	¦	3,750 kg (8,267 lbs)
25.3 %	25.5 %	26.5 %	3,900 kg (8,598 lbs)

In the Acrobatic Category, with underwing stores configuration 4
[% MAC] with a straight line variation in between

Forward CG		Aft CG	at weight
Gear Down	Gear Up		
19.5 %	20 %	28 %	2,503 kg (5,518 lbs)
19.5 %	20 %	28 %	2,750 kg (6,063 lbs)
21.5 %	22 %	28 %	3,100 kg (6,834 lbs)

Maximum Operating Weights

In the Acrobatic Category (clean wing and underwing stores in configuration 1 and 4)

Max. ramp weight	3,120 kg	(6,878 lbs)
Max. take-off weight	3,100 kg	(6,834 lbs)
Max. landing weight	3,100 kg	(6,834 lbs)
Max. zero fuel weight	2,750 kg	(6,062 lbs)
Min. flying weight config 0,1	2,330 kg	(5,136 lbs)
Min. flying weight config 4	2,503 kg	(5,518 lbs)
Max. weight of stores (including Pylon weight)		
Inboard Pylon	176 kg	(388 lbs)
Outboard Pylon	176 kg	(388 lbs)

In the Utility Category (underwing stores in configuration 2)

Max. ramp weight	3,620 kg	(7,964 lbs)
Max. take-off weight	3,600 kg	(7,937 lbs)
Max. landing weight	3,600 kg	(7,937 lbs)
Max. zero fuel weight	2,750 kg	(6,062 lbs)
Max. weight of stores	500 kg	(1,100 lbs)

In the Utility Category (underwing stores in configuration 3)

Max. ramp weight	3,920 kg	(8,642 lbs)
Max. take-off weight	3,900 kg	(8,598 lbs)
Max. landing weight	3,900 kg	(8,598 lbs)
Max. zero fuel weight	2,850 kg	(6,283 lbs)
Min. flying weight	2,555 kg	(5,633 lbs)
Max. weight of stores (including Pylon weight)		
Inboard Pylon	500 kg	(1,100 lbs)
Outboard Pylon	176 kg	(388 lbs)

Minimum Crew

One pilot (Solo Flight is limited to front cockpit).
2 pilots are required for civil IFR operations if no autopilot is installed.

Number of Seats

The PC-21 has a tandem cockpit seating for pilot training. The rear seat can be used as a passenger seat.

Ejection Seat, Cockpit Front:
- P/N: Martin Baker MKCH16C-1
- Total Mass (without ISS Beam, Guide Rails and PSP): 79.3 kg (174 lbs)

Ejection Seat, Cockpit Rear:
- P/N: Martin Baker MKCH16C-2
- Total Mass (without ISS Beam, Guide Rails and PSP): 77.7 kg (171 lbs)

Maximum Baggage

Baggage compartment in the AFT fuselage left hand side:
25 kg (55 lbs) at 7100 mm

Fuel Capacity
(at 0.806 kg/l)

The fuel system is fully automatic and maintains fuel supply during all operations. Fuel is contained in two integral wing tanks with a total usable capacity of 675 liters (see Note 1).

The acrobatic tank allows 45 seconds of inverted flight (at less than zero g).
Each optional Underwing Tanks has a usable capacity of 250l.

Oil Capacity

Total	**Arm**
19.4 liters	1.718 m aft of datum

Control Surfaces

Wing flap	Take-off	20° ±1.0°	Landing	34° ±1.0°
Ailerons	Up	17.5° ±0.5°	Down	14° ± 1.0°
Aileron flettner tabs	Up	10.5° ±1.0°	Down	13.1° ±0.5°

*for fixed tab the deflection is 0° (post SB 27-015, see note 6)

Spoilers	Up	38.5° - 42°		
Elevator	Up	23° ±1.0°	Down	16° ±1.0°
LH Elevator tab:				
Flettner def.	UP	12.6° ±0.4°	Down	8.3° ±0.4°
RH Elevator tab:				
Flettner def.	UP	14.4° ±0.4°	Down	10.8° ±0.4°
Trim def.	Up	7.5° ±0.5°	Down	3.5 °±1.0°
Airbrake comp.	UP	1.75° ±0.15°		
Rudder	Right	28° ±1.0°	Left	28° ±1.0°
Rudder trim tab	Right	4.5° ±1.0°	Left	19° ±1.5°
Airbrake	Down	65.5° ±2.0°		

See note 6.

Maximum Operating Altitude

25'000 ft.
The maximum operating altitude of 25'000 ft is included in the limitations section of the Airplane Flight Manual (AFM) Report No 02255.

An aural alert has been incorporated into the aircraft's information system, which will alert the pilot when the certified maximum altitude (plus tolerance) is exceeded (25'000 + 1'000 = 26'000 ft).

Datum

3000mm in front of the firewall

Levelling Means

Marks (colored rivet heads) on each side of the fuselage.

Certification Basis

US Federal Aviation Regulation Part 23, Acrobatic Category, including amendments 23-1 through 23-54, effective December 13th, 2000 and US Federal Aviation Regulation Part 23, Utility Category, including amendments 23-1 through 23-59, effective December 23rd, 2009, as defined in CRI A-1.

Swiss Regulation 748.215.1 dated 18. September 1995 regarding aircraft airworthiness (Verordnung über die Lufttüchtigkeit von Luftfahrzeugen –VLL).

Swiss Regulations 748.215.3 dated 10. January 1996 regarding emissions from aircraft (Verordnung über die Emissionen von Luftfahrzeugen –VEL).
ICAO Annex 16, Chapter 10.

Certification Review Items (CRI) :

- Regulations (CRI) FOCA No.:

A-1	Certification Basis
A-3	Environmental Standards
A-4	Additional National Requirement for Operational Approvals
A-5	Type Design Definition
A-6	Swiss IFR Requirements

- Special conditions (CRI) FOCA No.:

A-2	Maximum Operating Altitude
B-2	Vibration and Buffeting
C-1	Unsymmetrical Loads on Horizontal Tail
C-3	Rudder, Elevator & Aileron Control Forces
C-4	Sudden Deflection of Control Surfaces
C-5	Horizontal Tail Maneuvering Loads
C-8	Engine Mount Loads
C-9	Fatigue Evaluation
C-10	Rolling Maneuver
D-2	Ejection System Related Subjects
D-4	Pressurized Aerobatic Fuel Wing Tank/Air Separator
D-6	Pressurized Cabin Sudden Decompression
D-9	Bird Strike
D-10	Elevator and Rudder Mass Balance Horns
D-12	Powered Ailerons
E-1	Engine Control
F-5	Protection from HIRF
F-6	Protection from the Indirect Effects of Lightning Strike
F-7	Protection from the Direct Effects of Lightning (incl. Zone Definition)
F-9	Head Up Display (HUD)
H-1	Stores and their suspension
H-3	Release of external stores

- Equivalent Safety Findings (CRI) FOCA No.:

B-1	Elevator Control Force in Maneuver
B-3	Wings Level Stall with Underwing Stores Installed
B-4	Longitudinal Trim in Descent with Underwing Stores Installed
D-1	Emergency Exits (Ejection Seats)
D-3	Seat Dynamic Testing, Head Injury Criteria
D-5	Structural Integrity in Case of Fire
F-13	AFM in Cockpit
F-19	Aural Mute
G-1	Ejection Seat & Canopy Fracturing System (Labels & Markings)
G-3	Color Scheme of Emergency and Stores Management Controls within the Cockpit
H-2	Stall speed with under wing stores

- Deviations (CRI) FOCA No.:

C-2	Indication of Cabin Pressure Altitude of 10'000ft
C-6	Cabin Pressure Altitude Rate-of-Change Indication
D-8	Hand Fire Extinguisher
D-13	Fasteners
F-10	Switch labeling – Attention getters
H-4	Exemption for PC-21 aircraft MSN 101 thru 127 and 153 thru 154 with lower prescribed wing skin thicknesses in several locations than those defined by standard industry practice for fuel system lightning protection, and when underwing stores are installed.
H-5	Exemption to the requirement to retain fuel when landing on a paved runway with the most critical landing gear leg collapse with underwing tanks installed

Initial application for type certification to Swiss FOCA dated February 4th, 1999.

Kinds of Operation:

Eligible for the following kinds of operations when the appropriate equipment and instruments required by the operating requirements are installed, approved and in operable condition:

- VFR Day
- VFR Night
- IFR

Flight into known icing conditions is not approved.

Serial Numbers Eligible

MSN 101 and up (see notes 3, 4 and 5)

Required Equipment

The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the aircraft. In addition the following is required:

Airplane Flight Manual (incl. Equipment List and applicable Supplements) Report No. 02255

AFM supplement for Operations with Underwing Stores Installed Report No. 02330

AFM supplement for Operations with External Smoke Generators Installed Report No. 02345

AFM supplement for Operations with High Output External Smoke Generators Installed Report No. 02376

AFM supplement for Operations with External Smoke Generators Installed on the Inboard or on the Outboard Pylons Report No. 02438

AFM supplement for Operations with Underwing Tanks on the Inboard Pylons and External Smoke Generators on the Outboard Pylons Installed Report No. 02437

Service Information:

Aircraft Maintenance Manual (AMM): Report No. 02257
(Airworthiness Limitations Section FOCA approved)

Structural Repair Manual (SRM): Report No. 02258

Illustrated Parts Data (IPD): Report No. 02259

Placards:

All required placards must be installed in the proper locations.

Service Life Limits

Life limited airplane components are listed in the Chapter 5 of the Aircraft Maintenance Manual (AMM), and must be replaced as indicated therein (see note 2)

Notes for PC-21:

Note 1

Current weight and balance data, loading information, and a list of equipment included in empty weight must be provided for each airplane.

a) Basic empty weight includes engine oil of 19 kg (35 lbs) at 1.718m (65 in).

Note 2

Airworthiness Limitations are contained in the FOCA approved Airworthiness Limitations Section in the Chapter 5 of the PC-21 Aircraft Maintenance Manual (AMM). These Limitations may not be changed without FOCA approval.

This section contains mandatory maintenance actions called Certification Maintenance Requirements (CMR), which must be performed at specific intervals to compensate for latent failures, as identified during the System Safety Assessment process.

Note 3

MSN 101 and 102 are not eligible for a standard CofA without retrofit to production standard.

Note 4

MSN 101 thru 127 (included) are not eligible for operations with underwing stores installed in accordance with the AFM Supplement Reports No. 02330 / 02345 / 02367, unless the aircraft is modified in accordance with the SB 57-003.

Note 5

For aircraft MSN 101 thru 127 and 153 thru 154, the CRI H-4 is applicable.

Note 6

MOD19-056 / EC-19-0142 - AILERON TAB SYSTEM MODIFICATION must be installed for underwing stores configuration 2, 3 and 4.

MOD19-015 / EC-19-0030 - ELEVATOR TABS INCREASED MASS BALANCE WEIGHT must be installed for clean wing and underwing stores configuration 1, 2, 3 and 4.

- End of document -