Familiarization Briefing
Engadin Airport LSZS
Index

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Foreword

The Airport of Samedan is a VFR airport open to private and commercial operators. It is situated in a particular geographical area. Located in the Engadin Valley, the airport is surrounded by a mountainous region wherein the flight procedures and aircraft performances are very strongly affected by its natural obstacles. This is particularly true for VFR flights. For this reason, the approach to and the departure from LSZS are limited to flight crews fulfilling the requirements of the concept for mandatory familiarization.
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The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use the official documentation published in the AIP Switzerland.

The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use only the official documentation published in the AIP.
Introduction

Welcome to the Engadin Airport pilots’ briefing website provided by the LSZS Airport Authority. Samedan airport is situated in a mountainous area, therefore VFR approaches and departures are limited to pilots and operators fulfilling the requirements of the concept for mandatory familiarization.

Qualification
The Engadin Airport pilots’ briefing covers the different operational requirements and information which are necessary as well as helpful in the execution of flights to and from Samedan, such as aircraft performances or operational requirements. For details consult concept for mandatory familiarization.

ICAO Aircraft Approach Categories
Category A: Approach Speed less than 90 knots $V_{APP}$
Category B: Approach Speed between 91 and 120 knots $V_{APP}$
Category C: Approach Speed between 121 and 140 knots $V_{APP}$
Category D: Approach Speed between 141 and 165 knots $V_{APP}$

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CH-7503 Samedan
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The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use only the official documentation published in the AIP.
Introduction

The Samedan Briefing is meant to support you in your personal flight preparation. In this section you will find some general information concerning the main operational issues of the Engadin Airport such as:

1. General information 07 - 18
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It is advised that personal flight preparation of any pilot intending to operate in or around Samedan shall go beyond the information contained in these pages and should be based on current official documents such as AIP, VFR-Manual, Notam etc.
1. General information

LSZS airport is a Civil, Category B Airport and is open to all private, commercial and business flights as well as to unscheduled VFR flights.

Reminder: The Engadin Airport is the highest elevated airport in Europe:

Elevation

5‘600 ft AMSL
1.1 General information

Airspace & Weather conditions

**IFR**
- MIL OF FL 150
- MIL ON FL 130

**VFR**
- FL 100
- VIS 8 KM
- VIS 5 KM
- AFIS

**WX minima for VFR traffic:**
- **Airspace E** FL 100 – FL 130/150
  - VIS: 8 KM
  - Distance to clouds: Vertical 1’000 ft
  - Horizontal 1’500 M
- **Airspace E** 2000 ft AGL – FL 100
  - VIS: 5 KM
  - Distance to clouds: Vertical 1’000 ft
  - Horizontal 1’500 M
- **Airspace G** GND – 2‘000 FT GND
  - VIS: 5 KM clear of clouds, vis contact to GND
  - VIS below 5 KM (minimum 1.5 KM), only if turning to reverse course is possible and speed max 140 kts IAS

Be aware: Your flight might be monitored by Swiss Airforce

The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use only the official documentation published in the AIP.
1.1.1 General information

Airspace Golf

Be aware of turning radius:
Refer to chapter 9. IAS-TAS/Reverse turn: page 55

The information in this document serves to increase the safety of operation to an from LSZS. For flight preparation use only the official documentation published in the AIP.
1.2 General information

- Samedan has a FIZ (Flight Information Zone)
- Airport opening hours summer: 0600Z to 1700Z.
- FIS (Flight Information Service) is available: 0600Z to 1700Z.
- Airport opening hours winter: 0700Z to SS+30min
- FIS (Flight Information Service) is available: 0700Z to SS+30min

NO NIGHT OPERATION
1.3 General information

Samedan AFIS

• Samedan Information is not equipped with a radar display.

• AFISO (Aerodrome Flight Information Service Officer) is not authorized to give ATC instructions or clearances, except for ground movements.

• To enter the FIZ radio contact with Samedan Information is compulsory.

• Check the appropriate NOTAMs for special regulations, for example during the World Economic Forum in Davos (WEF), usually at end of January.
1.4 General information

Seasonal traffic density

*Winter* is the peak-traffic season. Expect a high traffic density. This requires special attention at the airport and in the vicinity of the airport (traffic circuit).
1.5 General information

Seasonal traffic density

**Summer**

*Glider activities:* The mountains near the airport are attractive to gliders. Expect intense glider activities between May and September within the FIZ and in the traffic circuit.
1.5 General information

Hang Glider

**Start Area**: Muottas Muragl or Alp Languard south east of the airport.

**Landing Area**: Valley station of the funiculare Muottas Muragl.

Hang Gliders are requested only to fly in the area between Start- and Landing Area in order not to interfere with aircraft in the traffic pattern for RWY 21, as well as aircraft performing straight-in arrival and departure.
1.5 General information

Helicopter Operations

There are different companies and the “Swiss Air Rescue Guard”, called REGA, based at Samedan Airport. During winter season, December 15th to April 15th, a Heliport (LSXM) is established at St. Moritz-Bad, 3.6 NM from THR RWY 03.
Helicopter Operations

Three off the main landing areas outside the airport:

- the Hospital, located west of THR runway 21
- the Clinic Gut, located downtown St. Moritz
- the TEMP heliport LSXM, located southwest of St. Moritz

Be aware that helicopter operations may cause TCAS alerts.
1.6 General information

Runway information / Airport overview

Runway 03 / 21  1‘800 m x 40 m asphalt /concrete
Slope Runway 03  0.4% down slope
Slope Runway 21  0.4% up slope

For further information refer to AIP/VFR-Manual Switzerland
2. General operation requirements

Qualification

**NOTE: Check first if you are qualified.**

The Samedan airport is situated in a mountainous region. Due to this special geographical and meteorological situation the use of the airport is limited to pilots having successfully completed the mandatory familiarization briefing. This briefing is provided on the webpage of the Engadin Airport (LSZS Briefing). Following the briefing you have to pass the online test. For further requirements please consult the next page – Qualification/Currency-Requalification.

It is the responsibility of each pilot to be qualified and current. Each pilot must be able to prove, to FOCA or the Airport Authority, at any time, that he fulfils these requirements.

For details consult [concept for mandatory familiarization](https://www.engadin-airport.ch/info@engadin-airport.ch).
## Qualification / Currency / Requalification

<table>
<thead>
<tr>
<th>Qualification</th>
<th>mandatory</th>
<th>Aeroplanes ICAO Cat. A</th>
<th>Aeroplanes ICAO Cat. B and higher</th>
<th>Helicopters</th>
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<tr>
<td>Briefing</td>
<td></td>
<td>LSZS Familiarization Briefing and Test not older than 12 months</td>
<td></td>
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<tr>
<td>last LDG at LSZS</td>
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<tr>
<td>no LDG at LSZS or more than 24 months ago</td>
<td>Introduction flight with LSZS current FI Pilot with MOU-License, NIL</td>
<td>Flight into LSZS with MET COND CAVOK or supervised by LSZS current pilot</td>
<td>NIL</td>
<td></td>
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<tr>
<td>within 24 months</td>
<td>NIL</td>
<td>NIL</td>
<td>NIL</td>
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For details consult [concept for mandatory familiarization](#).

The information in this document serves to increase the safety of operation to an from LSZS. For flight preparation use only the official documentation published in the AIP.
3. Weather

General
Because of its special climate, the weather is nice most of the time. Significant changes of weather conditions within a short time are frequent in the mountains. Even if the weather condition is reported to be good, clouds over the valley can make it impossible to maintain VMC. It is the pilot’s responsibility to assess the weather situation and to maintain VMC!

Wind
During winter calm winds predominate throughout the whole day. In summer the special local wind (Maloja Wind) dominates the wind patterns in the Engadin. This valley wind can be very strong (up to 20 knots or more). It normally starts at noon, coming from the south-west. North winds: Take care of north-easterly winds aligned with the runway axis and expect moderate and severe turbulences in approach sector. (RWY 03 in use)

Visibility
In winter, visibility may be reduced temporarily due to snow showers. Fog is not a very frequent phenomena. It is mainly observed during a few days in spring and autumn.
3.1 Weather

Clouds
In winter, cold dry air moves into the valley from the north-east and generates sunny days with cirrus or no clouds.
In summer, moist air moves into the Alps from the Mediterranean Sea and generates days with stratus clouds, reduced visibility and rain.

Current meteorological information
Current meteorological information can be found on the Skybriefing site: [www.skybriefing.com](http://www.skybriefing.com). For ATIS, refer to the AIP. Furthermore different webcams are available in the Engadin valley.

NOTE:
The runway will be closed for jet aircraft Class B and higher if weather conditions are below visibility 5 KM and/or ceiling (bkn or ovc) below 2’200 ft AGL.

For LSZS the ICAO MET term CAVOK means rather nice weather conditions. Due to high MSA, there are no clouds below 15’600 ft AMSL when LSZS reports CAVOK.
4. Geographical and topographical situation

General view
Samedan airport is situated north-east of St. Moritz and east of Samedan. The airport is surrounded by high mountains.
4.1. Geographical and topographical situation

Airspace
Samedan airport is close to the Swiss-Italian border. Study the surrounding airspace carefully.

Obstacles
Aerodrome obstacle charts are available to identify critical obstacles in both runway directions. Refer to AIP.
5. Approach and departure

General
Samedan is a civil VFR airport. As no IFR approach procedure is available, such approaches are prohibited. The airport is located near St. Moritz, on the north-west side of Muottas Muragl. Refer to AIP or to official route documentation for exact location and for technical information. Study carefully the requirements and conditions for the execution of the flight procedures and keep attention of GPWS indications due to the topography of the valley.
5.1 Approach and departure

Study carefully the VFR charts:
For VFR Area Chart and Visual Approach Chart refer to AIP Switzerland (VFR-manual).
**Note:** Expect unknown VFR activity inside and outside of the FIZ (Airspace Class E & G)
5.2 Approach and departure

General

Aircraft Class A/Helicopter
Establish radio contact 5 min. before entering the FIZ (Flight Information Zone) or Maloja, Julier, Albula, Zernez, Bernina.

Aircraft Class B and higher
To get familiar with the location of the airport and the valley, do not hesitate to request permission from ZURICH DELTA – if still IFR and/or within airspace C – to fly over the valley first. If VFR and released by ZURICH DELTA Contact Samedan Information and proceed to Maloja or Zernez for a straight-in approach.

Additional information
Expect general information by ATIS and traffic information by AFISO. Observe the surroundings! Look out for unknown VFR traffic in the vicinity of the airport. During winter, expect helicopter traffic at the St. Moritz Bad Heliport LSXM close to the approach sector RWY 03 at very low altitude (3.6 NM from THR RWY 03). Their standard procedure avoid the approach and departure sector of Samedan airport. Expect intense glider activity from May to September. Gliders have landing priority. Be aware of direct approach of jets from Maloja or Zernez.

Approach RWY 21: Restricted area LSR11/R11A can be active. Please check ATIS. For crossing coordination, you may contact Samedan Info as early as possible (min. 15 minutes before ETA).
5.3 Approach and departure (Cat. B and higher)

SAMEDAN ARRIVAL FOR RWY 03 AND 21 VIA MALOJA AND ZERNEZ

In case of insufficient weather conditions or traffic congestion over the valley, you may contact Zürich Delta again and request to rejoin IFR and hold over PELAD or RONAG. If unable to land in Samedan, proceed to your alternate airport.

To get familiar with the location of the airport and the valley, do not hesitate to request permission from Zürich Delta – only when in Airspace Class C – to fly over the valley first.

When you have the airport in sight, contact Samedan Information and proceed to Maloja or Zernez.

The information in this document serves to increase the safety of operation to an from LSZS. For flight preparation use only the official documentation published in the AIP.
5.4 Approach and departure

Approach to RWY 03 - via Maloja

Establish radio contact 5 minutes before entering the FIZ (Flight Information Zone).

For the approach, it is suggested to proceed in the direction of Maloja and then turn inbound to LSZS at 10NM.

NOTE: Samedan is a VFR airport and the PIC has the full responsibility to conduct a safe flight and to maintain VMC. The AFISO can only provide information regarding known traffic. No radar available. The valley is narrow.

The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use only the official documentation published in the AIP.
5.5 Approach and departure

Approach RWY 03 - via Maloja

ARRIVAL VIA MALOJA RWY 03
Suggested altitude for Cat. B and higher 10’000 ft AMSL (10NM FINAL)
Cat. A min. suggested altitude 7’200 ft AMSL
5.6 Approach and departure

Approach RWY 03 - via Maloja

ARRIVAL VIA MALOJA; RWY 03
Suggested altitude for Cat. B and higher 8’000 ft AMSL (6NM FINAL)

The information in this document serves to increase the safety of operation to an from LSZS. For flight preparation use only the official documentation published in the AIP.
5.7 Approach and departure

Approach RWY 03

ARRIVAL RWY 03
Suggested altitude for Cat. B and higher 7’000 ft AMSL (3NM FINAL)
Min. suggested altitude Cat. A and Helicopter 7’000 ft AMSL (reporting point Whisky)

The information in this document serves to increase the safety of operation to an from LSZS. For flight preparation use only the official documentation published in the AIP.
5.8 Approach and departure

Approach RWY 03 aeroplane
Missed-approach: Cat. B and higher proceed back to Maloja and restart the VFR approach.
Cat. A proceed via circuit and restart the approach.
NOTE: Be aware of the area needed for manoeuvring and climb to suitable altitude before starting reverse turn.

The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use only the official documentation published in the AIP.
5.9 Approach and departure

Approach RWY 03 for helicopter

If traffic requires, AFISO may request you to proceed and report east of FATO (remain east and stay clear of runway axis)
Information on Helipad condition is given by AFISO, SNOWTAM, METAR, ATIS. Expect blowing snow (White Out)

ARRIVAL RWY 03; VIA FATO to designated Helipad (1-5)

The information in this document serves to increase the safety of operation to an from LSZS. For flight preparation use only the official documentation published in the AIP.
5.10 Approach and departure

Approach RWY 21 via Zernez

Zernez

AFIS  135.325 MHz
ATIS  136.600 MHz

Establish radio contact 5 minutes before entering the FIZ (Flight Information Zone).

For the approach, it is suggested to proceed in the direction of Zernez and then turn inbound to LSZS at 10NM.

NOTE: Samedan is a VFR airport and the PIC has the full responsibility to conduct a safe flight and to maintain VMC. The AFISO can only provide information regarding known traffic. No radar available. The valley is narrow.

The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use only the official documentation published in the AIP.

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Plazza Aviatica 2
www.engadin-airport.ch/info@engadin-airport.ch
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5.11 Approach and departure

Approach RWY 21 via Zernez

ARRIVAL VIA ZERNEZ RWY 21
Suggested altitude for Cat. B and higher 10’000 ft AMSL (10NM FINAL)
Cat A min. suggested altitude 7’200 ft AMSL

The information in this document serves to increase the safety of operation to an from LSZS. For flight preparation use only the official documentation published in the AIP.
5.12 Approach and departure

Approach RWY 21 via Zernez

ARRIVAL VIA ZERNEZ; RWY 21
Suggested altitude for Cat. B and higher 9’000 ft AMSL (6NM FINAL)
5.13 Approach and departure

Approach RWY 21

ARRIVAL; RWY 21
Suggested altitude for Cat. B and higher 7’000 ft AMSL (3NM FINAL)
Min. suggested altitude Cat. A and Helicopter 7’000 ft AMSL (reporting point Echo)
5.14 Approach and departure

Approach RWY 21 aeroplane

Missed-approach: Cat. B and higher proceed back to Zernez and restart the VFR approach. Cat. A proceed via circuit and restart the approach.

Note: Be aware of the area needed for manoeuvring and climb to suitable altitude before starting reverse turn.

SHORT FINAL RWY 21

The information in this document serves to increase the safety of operation to an from LSZS. For flight preparation use only the official documentation published in the AIP.
5.15 Approach and departure

Approach RWY 21 for helicopter

In case of traffic AFISO may request you to proceed and report east of FATO (remain east and stay clear of runway axis)

Information on Helipad condition is given by AFISO, SNOWTAM, METAR, ATIS. Expect blowing snow (White Out)

ARRIVAL RWY 21 VIA FATO to designated Helipad (1-5)

The information in this document serves to increase the safety of operation to an from LSZS. For flight preparation use only the official documentation published in the AIP.
5.16 Approach and departure

Approach via Albula: **Not available for aircraft of ICAO APCH Cat. B and higher**

![Map of Albula and La Punt (E)](image)

Albula

AFIS 135.325 MHz
ATIS 136.600 MHz

Establish radio contact 5 minutes before entering the FIZ (Flight Information Zone).

**NOTE:** Samedan is a VFR airport and the PIC has the full responsibility to conduct a safe flight and to maintain VMC. The AFISO can only provide information regarding known traffic. No radar available. The valley is narrow.
5.17 Approach and departure

Approach via Albula: Not available for aircraft of ICAO APCH Cat. B and higher

ARRIVAL VIA ALBULA; Albulapass
Min. suggested altitude 8’700 ft AMSL

The information in this document serves to increase the safety of operation to an from LSZS. For flight preparation use only the official documentation published in the AIP.
5.18 Approach and departure

Approach - via Bernina: **Not available for aircraft of ICAO APCH Cat. B and higher**

Bernina

AFIS  135.325 MHz
ATIS  136.600 MHz

Establish radio contact 5 minutes before entering the FIZ (Flight Information Zone).

**NOTE:** Samedan is a VFR airport and the PIC has the full responsibility to conduct a safe flight and to maintain VMC. The AFISO can only provide information regarding known traffic. No radar available. The valley is narrow.

The information in this document serves to increase the safety of operation to an from LSZS. For flight preparation use only the official documentation published in the AIP.
5.19 Approach and departure

Approach via Bernina: **Not available for aircraft of ICAO APCH Cat. B and higher**

ARRIVAL via Bernina: Berninapass
Min. suggested altitude 8’600 ft AMSL

The information in this document serves to increase the safety of operation to and from LSZS. For flight preparation use only the official documentation published in the AIP.
5.20 Approach and departure

Approach via Bernina: Not available for aircraft of ICAO APCH Cat. B and higher

ARRIVAL VIA Bernina: Pontresina (Sierra)
Min. suggested altitude 7’000 ft AMSL (reporting point Sierra)

The information in this document serves to increase the safety of operation to an from LSZS. For flight preparation use only the official documentation published in the AIP.
5.21 Approach and departure

Approach via Julier: Not available for aircraft of ICAO APCH Cat. B and higher

Julier

AFIS 135.325 MHz
ATIS 136.600 MHz

Establish radio contact 5 minutes before entering the FIZ (Flight Information Zone).

NOTE: Samedan is a VFR airport and the PIC has the full responsibility to conduct a safe flight and to maintain VMC. The AFISO can only provide information regarding known traffic. No radar available. The valley is narrow.
5.22 Approach and departure

Approach via Julier: **Not available for aircraft of ICAO APCH Cat. B and higher**

ARRIVAL VIA Julier; Julierpass
Min. suggested altitude 8’600 ft AMSL
5.23 Approach and departure

Caution! Winter scenery looks significantly different (example below: approach RWY 03)

The information in this document serves to increase the safety of operation to an from LSZS. For flight preparation use only the official documentation published in the AIP.
5.24 Approach and departure

Important Information:

RUNWAY CONDITION

- Information on runway condition is given by AFISO, SNOWTAM, METAR, ATIS.
- Estimated Runway Surface Friction is assessed and reported based on readings from Decelerometer (friction test device), runway contamination, vehicle control and PIREPs.
5.25 Approach and departure

NOTE:

• Check the weather situation over the Alps.
• Check the density altitude.
• Check the aircraft performance, for helicopters HOGE.
• Check runway condition.
• Check NOTAM.
• On departure, observe the speed and maintain a good rate of climb, especially for high performance jet aircraft.
• External lighting has to be used (recognition lights, pulse lighting, etc..).
6. Noise abatement and communication

6.1 Noise abatement

• Make sure that the type of aircraft (noise class) is allowed to operate at Samedan airport.

• More than idle reverse shall be used for safety reason only. (Jet)

• APU shall be started at the earliest 30 minutes before EOBT and shall be shut off at latest 15 minutes after reaching the park position. (Jet)

• Avoid flying over towns and villages and noise sensitive areas when operationally possible (see VFR chart).

• Helicopter: Reduce speed when approaching airport.

• For further information refer to AIP LSZS.
6.2 Communication

Samedan ATIS: Freq.: 136.600
Samedan INFO: Freq.: 135.325
Tel.: (+41(0)81 834 93 24)
Tel.: (+41(0)81 851 08 51)

Zürich Delta: Freq.: 119.225
Zurich Information: Freq.: 124.700

Below 10’000 ft AMSL no radio contact likely or difficult
7. Aircraft performance (AEO and OEI)

The characteristics of the terrain surrounding the Samedan airport are quite demanding in terms of aircraft climb performances.

Note:
Depending on the performance of the aircraft, operators may have to consider the necessity of establishing contingency procedures for certain flight manoeuvres (see also Contingency procedures on page 57).

- Operators shall calculate and publish the necessary performance tables, such as mass, airport and temperature (MAT) for the operation in Samedan as well as for the individual runway tables (IRT) including:
  - MTOM tables for all applicable departures covering one engine inoperative (OEI) conditions.
  - MLM tables for approach covering the speed requirements.
  - If required, contingency procedures covering the entire MAT items above.
  - High density altitudes are most commonly found at high elevation airports (Samedan elev. 5’600 ft) in combination with high ambient temperatures. Make sure to check all related performance charts for your aircraft.

Obligation of reporting according to concept for mandatory familiarization.

- Mass and balance calculation (Cat. A and helicopter)
- Performance chart (climb out Cat. A)
- Hovering out of ground effect (HOGE) calculation (helicopter)
8. Bank angle / g-Force / Stall speed

Aircraft manoeuvring is assumed to be conducted at minimum defined pattern speed according to AFM. This covers adequate safety margin above stall speed. Using higher bank angles to avoid obstacles or for any reason may bring the aircraft close to or into stall conditions.

**Stall speed:** As weight doubles (60° bank), stall speed increases by \( \sqrt{2} \), or 1.414
9. IAS – TAS / Reverse turn

Aircraft operation under VFR and in mountainous terrain requires solid knowledge of the atmosphere theory. Density altitude and therefore true airspeed (TAS) can be considerably higher than aerodrome altitude (AD ELEV) or indicated air speed (IAS). Thus, pilots may be surprised by the area needed to maneuver the aircraft (reverse turn).

**True airspeed (TAS):** Add 2% to indicated airspeed (IAS) for every 1,000 feet increase in altitude.

**Standard temperature (ISA):** 15°C (59°F) at sea level. ISA decreases 2°C (3.5°F) per 1’000 foot increase in altitude.

**Density altitude:** Increases or decreases 120 ft for each 1 degree Celsius that the temperature varies from standard temperature and: Increases or decreases 27 ft for each hPa that the QNH varies from STD (1013.25 hPa)

The information in this document serves to increase the safety of operation to an from LSZS. For flight preparation use only the official documentation published in the AIP.
10. Calculation Density Altitude

Calculation Density Altitude
Example: Density Altitude Samedan at 1030 hPa and 22°C OAT

Solution steps:
1. Calculation Pressure Altitude
2. Calculation Standard temperature on Pressure Altitude
3. Calculation Density Altitude

Calculation Pressure Altitude
QNH 1030 hPa
Standard pressure 1013 hPa
Difference 17 hPa (lower)

Calculation method: 27 ft per hPa difference of pressure
Calculation altitude differential 17 x 27 ft = 459 ft
Elevation Engadin Airport 5600 ft
Altitude differential - 459 ft
(Minus if QNH is higher then 1013 hPa)
Samedan Pressure Altitude at 1030 hPA 5141 ft

The information in this document serves to increase the safety of operation to an from LSZS. For flight preparation use only the official documentation published in the AIP.
10.1 Calculation Density Altitude

**Calculation Standard Temperature on Pressure Altitude**

**Calculation method: 2°C pro 1000 ft**

Calculation Pressure Altitude 5141 ft; 2 x 5.141 = 10.28 °C  
ISA Temperature Sea level 15 °C  
Difference 10.28 °C  
**Standard temperature on Pressure Alt. 5141 ft** 4.72 °C

**Calculation Density Altitude**

Samedan OAT 22 °C  
Standard temperature on Pressure Alt. 5141 ft 4.72 °C  
**Difference** 17.28 °C

**Calculation method altitude differential: 120 ft pro °C**

Calculation altitude differential 120 x 17.28 = 2073.6 ft

**Calculation method Density Altitude: If OAT is higher than Standard temperature of Pressure Altitude, altitude differential has to be added to Pressure Altitude.**

Pressure Altitude 5141 ft  
Altitude differential 2073.6 ft  
**Density Altitude** 7214.6 ft

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11. IAS – TAS / Landing distance

Density altitude affects the landing performance of an aeroplane as greatly as it affects takeoff performance. High temperature and high elevation will cause an increase in the landing roll because the true airspeed is higher than the indicated airspeed. Remind the higher touchdown speed and check the landing performance data according to the AFM of your aircraft rather than assuming the available runway being sufficient.

**LSZS STD TEMP (4°C)**

**TAS is 11.2% HIGHER**

*True airspeed (TAS):*
*Add 2% to indicated airspeed (IAS) for every 1’000 feet increase in altitude*
12. Engine Performance

Your engine may get a shortage of breathing at high altitude!

Remember the essentials:

- Proper adjustment of piston engine parameters (leaning) according to AFM
- Proper assessment of runway length and climbout profile
- Keep sufficient margins – don’t go to the edge!
12. Engine Performance

Typical Engine Power Loss with Altitude

A normally aspirated engine (without a turbocharger) routinely loses about 3% of its power for every 1000 ft increase in altitude. This means that a non turbocharged Piper Arrow rated at 200 hp at sea level will generate only about 165 hp at Samedan.
13. Take-off and Climb Performance
Take-off performance at sea level vs performance at high altitude

Higher density altitude means thinner air which seriously degrades aircraft performance.

Higher density altitudes also require a longer take-off roll. For safety reasons, add a margin of 30 to 50% to the values you retrieve from the POH/AFM.

Take-off performance for the selected values:
- Pressure altitude: 5600 ft
- Temperature: 19°C (ISA + 15°C)
13. Take-off and Climb Performance

Reduced climb performance due to wind

Always consider downdrafts caused by local winds. These downdrafts may exceed your climb performance and result in a descent, therefore the published departure circuit RWY 21 has to be observed. This situation has to be expected especially after departure on runway 21 in the region of the village Celerina.
13.1 Take-off and Climb Performance

Reduced climb performance due to wind

downdrafts caused by local wind (Malojawind)
14. Non-STD PAPI

The PAPI is not adjusted to the RWY axis, but 5° left of it.

- You cannot just follow the PAPI beam within the entire light covered sector. Obstacle clearance is not granted according to ICAO standard.
- The PAPI is to be used as a vertical guidance only avoiding critical terrain visually.
- The PIC has the full responsibility to keep clear of terrain and obstacles, while flying under VFR and in VMC.

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15. Emergency and contingency procedures

Contingency procedures
Aeroplanes:
As previously mentioned, depending on the performance of your aircraft, you may have to consider the necessity in establishing contingency procedures for certain flight manoeuvres.
Helicopter:
Commit to land on runway in case of emergency

16. Surveillance / Responsibilities / Sanctions

• The Commander is responsible to conduct the aeroplane safely within the certified envelope (AFM) and in compliance with the current regulations regarding proper weather conditions as well as published procedures for LSZS airport.

• The Airport Authority reports observed deviations from local procedures or regulations to FOCA.

• VFR traffic observation may be conducted by Swiss Air Force reporting to FOCA.

• FOCA is responsible for sanctions.