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- ◆ Checklists are marked with diamonds like this one.

### Abbreviations

*F/D or FD*: flight director

*A/P or AP*: autopilot

*A/T or AT*: auto-throttle

*ADI*: attitude director indicator (shows your attitude, navigational information and the *F/D*)

*HSI*: horizontal situation indicator (shows your heading and navigational information)

*VOR*: a navigational system for following radio nav aids towards a set direction

*ILS*: instrument landing system

*DME*: distance measuring equipment

*PCAS*: pitch command augmentation system

*RCAS*: roll command augmentation system

*YD*: yaw damper

# 1 Caution

\* This section is for quick reference only.

- Do not exceed **70° of bank below 200m AGL**.
- Do not operate with **RCAS, PCAS or YD enabled** on the ground.
- Keep above a minimum speed of **200 km/h**.
- Do not fly near or above **10km** of altitude for extended periods of time without a high altitude flight suit.
- Do not perform a sideslip for more than **5 seconds**.
- Do not attempt negative load factors, sustained load factors greater than **4,5 G** or **6,0 G** instantaneous.

## 2 Flight control systems

The *AS10* has some systems to help you control the aircraft.

### 2.1 PCAS

The *PCAS*, or “*Pitch Command Augmentation System*”, when on, takes control of the pilot’s pitch trim lever. The system maintains **1,0 G** when no command is given by the pilot.

When the pilot gives a command, the *PCAS* will automatically control pitch trim in order to maintain up to **2,8 G**.

To reach higher load factors, the *PCAS* must be turned off.

### 2.2 RCAS

The *RCAS*, or “*Roll Command Augmentation System*” is a full authority system that augments the pilot’s manual control entirely to automatically trim and control the aircraft’s roll. A full movement of the control stick will give a roll rate of **60° per second**.

### 2.3 YD

The *yaw damper* is a system seen on many other aircraft before. It keeps the aircraft’s flight coordinated. This yaw damper is a full authority system that augments the pilot’s rudder control. A full movement of the rudder pedals gives a sideslip of **1,3 G**.

### 3 Flight instrumentation

The AS10 is equipped with a standard eastern suite of flight instrumentation.

Units not explicitly labelled are metric:

- Indicated airspeed is in *kilometres per hour*
- Altitude is in *metres*
- Climb rate is in *metres per second*, where one mark is 5 m/s

Rate of turn is shown in *°/second*. The legend ends at *3°/sec. (2 min. turn)*



Figure 1: Pilot's centre panel with annotations (AS10A)

## 4 Autopilot systems

The AS10 is fitted with a sophisticated “Neosys A1C” autopilot flight director system.

The flight director is capable of performing the following actions:

- Heading holding (*when bug is zero*)
- Altitude holding (*when bug is zero*)
- Standard rate turns to the heading bug if set (*to non-zero; 360 for N*)
- 5 m/s climb or descent to the altitude bug if set (*to non-zero*)
- Automatic VOR radial following (*through nav/appr. mode*)
- Automatic approach and landing to ILS signal (*through nav/appr. mode*)

Additionally, the auto throttle system is capable of following your speed bug.

Once the flight director is in use, the autopilot is then capable of following the flight director. A/P cannot be operated without the F/D.

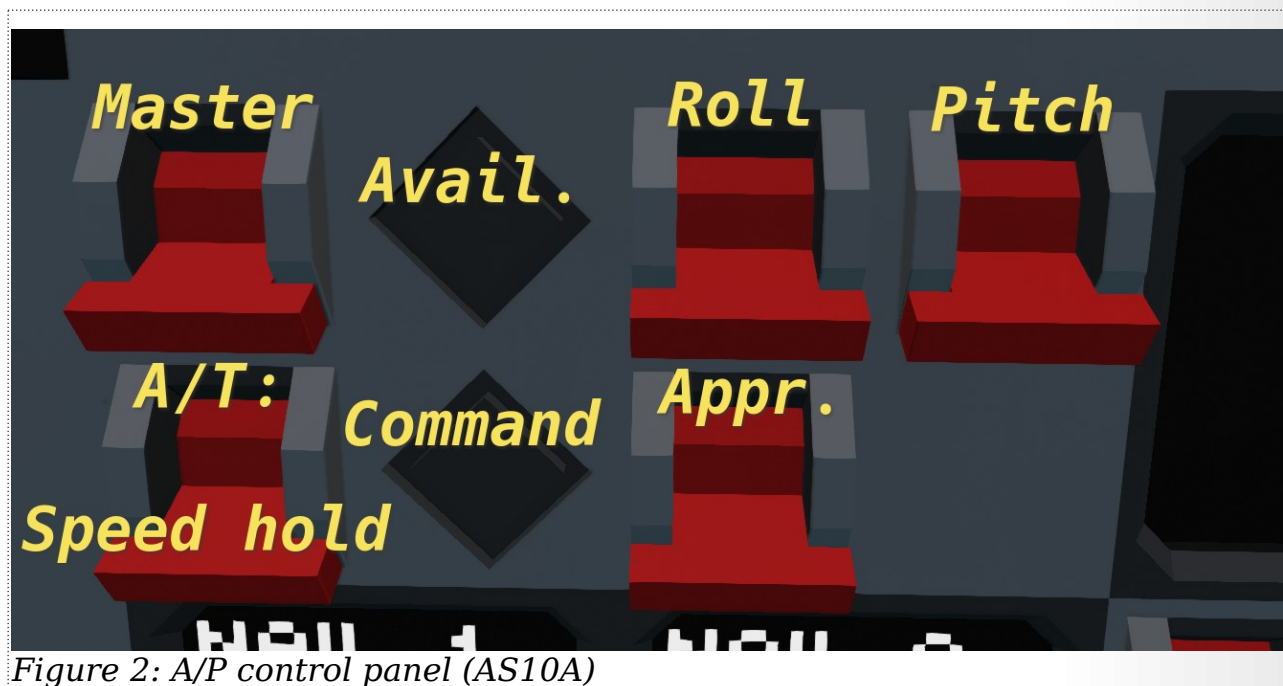


Figure 2: A/P control panel (AS10A)

In the event the A/P and A/T are both forcibly disconnected, a horn and the A/P disconnect light will activate.

## 5 Pre-startup checklists

### 5.1 Ground checks

Before entering the aircraft, you must verify the aircraft's airworthiness:

- ◆ Walk around the aircraft and inspect for obvious damage to the airframe, engine or fuel system.
- ◆ Walk to the port side main gear well and check fuel qty. The feed tank qty should be **>5 000 L**.
- ◆ Open the canopy and enter the aircraft.
- ◆ If canopy does not operate, contact your crew chief.

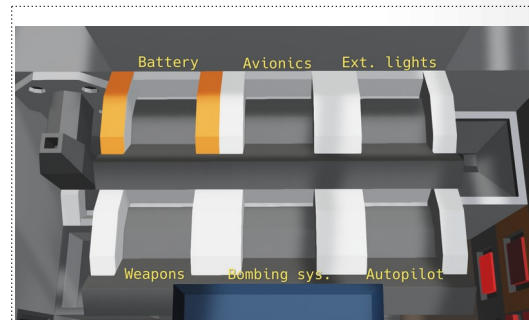


*Figure 3:  
Acceptable  
fuel volume*

### 5.2 Power

The breaker panel and battery can be found behind the pilot's seat.

- ◆ **Set** the battery breaker; verify availability of electrical power.
- ◆ **Set** exterior lights, avionics and autopilot breakers.
- ◆ If required: connect bombing systems and weapons breakers.



*Figure 4: Circuit breaker panel*

## 6 Ground operations checklists

### 6.1 Engine start

- ◆ Ensure throttle **0%**.
- ◆ Verify PCAS, RCAS and YD are off.
- ◆ Verify parking brake is **set**.
- ◆ Set beacon light.
- ◆ **Set** “Fuel xfer from reserve” to begin transfer of fuel into the feed tank.
- ◆ **Set** engine master switch.
- ◆ Begin holding down the engine start button.



*Figure 5: Engine controls (AS10D)*

- ◆ Push throttle to **5%**. Reset the starter after tachometer shows **> 1,5hz**.

## 6.2 Taxi

Most AS10 models are fitted with mechanical nosewheel steering. However, the AS10D is instead fitted with a castoring nosewheel and improved braking system.

- ◆ **Unset** parking brake.
- ◆ (AS10 A, B, C) **Set** nosewheel steering.
- ◆ (AS10D) **Verify** nosewheel unlocked.
- ◆ Increase throttle **>20%** to begin movement.
- ◆ (AS10D) Steer by fully deflecting rudder in the desired direction and pulling the brake lever.

## 6.3 Takeoff

- ◆ **Hold short of the runway.** Look both ways, verify that the runway is clear and communicate your intentions before entering.
- ◆ Line up and **disconnect or lock nosewheel steering.**
- ◆ Set pitch trim to  **$\pm 0,0$** .
- ◆ **Set** landing light.
- ◆ Start increasing throttle.
- ◆ Hold back with brakes until moving.
- ◆ Rotate **after 200 km/h** but **not before 250 km/h**.
- ◆ Raise landing gear **before 300 km/h**.
- ◆ **Enable PCAS, RCAS and YD stabilizing modes after raising gear.**



Figure 6: Gear and stab. modes (AS10D)



Figure 7: Pilot's nav selector and nosewheel control panel (AS10D)

## 7 En-route navigation

### 7.1 Dead reckoning

Dead reckoning navigation can be used in all situations. All you need is a watch to tell the time and a compass to tell your heading.

When visibility is good, landmarks can be used as steer points.

First plan your route. Simply write down the names of any points you will change your heading over, when you will do it and what heading you will be flying from one to the next.

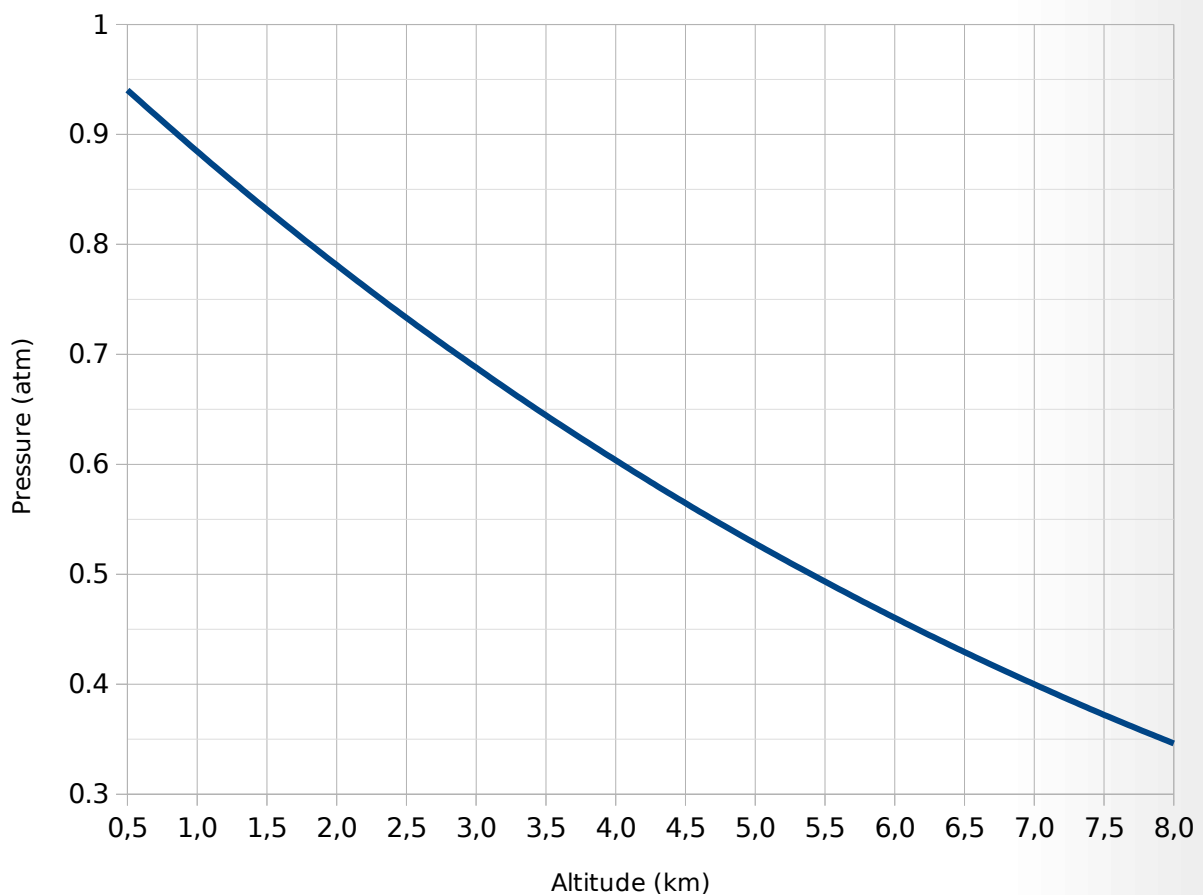


Figure 8: Altitude (km) against pressure (atm)

Make sure to write down the speed to hold and the time you will be at each steer point. This way you can time your turns.

Speed in the AS10 is shown as indicated airspeed. To convert the readout to true airspeed, divide it using a pressure value from figure 6.



## 7.2 VOR

Instrument navigation by VOR stations is the primary navigation method used in the AS10.

First plan your route as you would in dead reckoning, but plan it through one or more VOR stations. Note down the station's frequency.

When you reach the leg with the VOR, tune your nav radio to the frequency you noted down and set the nav decoder's omni bearing selector to the heading you noted down. Now follow this VOR radial until the next leg.

VOR stations are also available at almost every airport as a secondary mode of the GAILS localizer station.

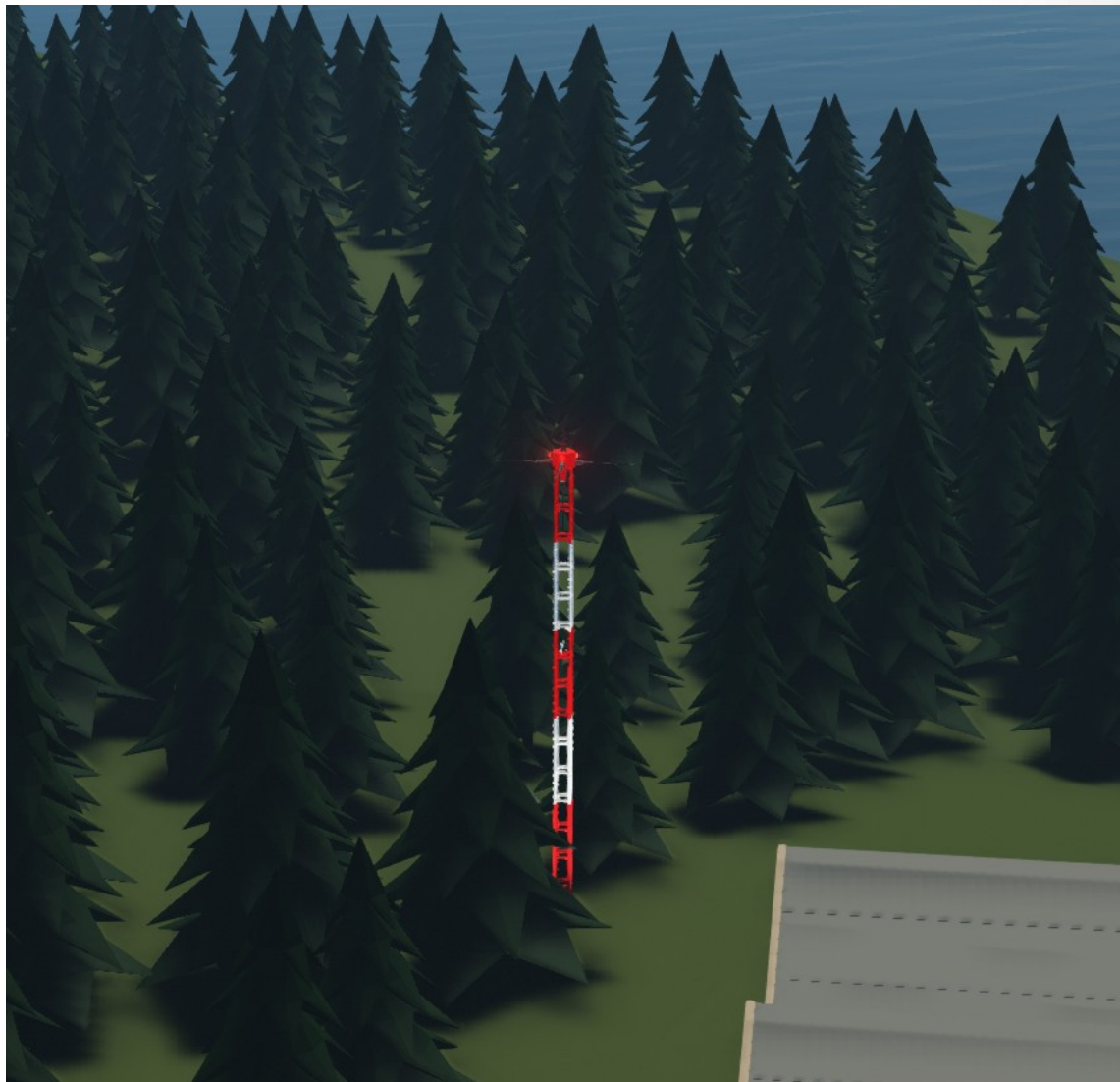


Figure 9: "SAW" GODS VOR station on channel 230

## 8 Landing checklists

### 8.1 Visual

- ◆ Enter traffic pattern at **200~300 km/h**.
- ◆ On approach, hold **200 km/h**.

### 8.2 VOR+DME approach (non-precision)

- ◆ Tune both nav radios to your VOR and DME stations.
- ◆ Set the altimeter zero point in the rear cockpit to the airfield's elevation from sea level.
- ◆ Set the **VOR omni bearing selector** to your runway heading.
- ◆ Set your secondary nav decoder to **DME** mode by tapping it in two different places at once.
- ◆ For a  $\sim 3,0^\circ$  glide slope, maintain just over **50 meters of altitude AGL for every kilometre of distance**.
- ◆ Hold **200 km/h** until touchdown.
- ◆ Ensure landing gear down below **100m AGL**.
- ◆ **DH: Go around no lower than 150m AGL without airfield in sight.**
- ◆ Once you have the airfield in sight, fly the landing visually.

### 8.3 ILS approach (manual; CAT I)

- ◆ Enter traffic pattern.
- ◆ Tune at least one nav radio to your ILS station's frequency.
- ◆ Set the altimeter zero point in the rear cockpit to the airfield's elevation from sea level. (*optional; recommended*)
- ◆ Get on approach. Follow ILS localizer and glide slope indications until airfield in sight. Hold **200 km/h** until touchdown.
- ◆ **Go around if significantly above glide slope.**
- ◆ Ensure landing gear down below **100m AGL**.
- ◆ **DH: Go around no lower than 60m AGL without airfield in sight.**
- ◆ Once you have the airfield in sight, fly the landing visually.

## 8.4 ILS approach (autonomous or F/D; CAT II)

- ◆ Enter traffic pattern.
- ◆ Tune at least one nav radio to your ILS station's frequency.
- ◆ Select this decoder as the active decoder on the selector panel.
- ◆ Set the altimeter zero point in the rear cockpit to the airfield's elevation from sea level. (*optional; recommended*)
- ◆ Get on approach. Ensure below the glide slope, nearby the localizer.
- ◆ **Go around if significantly above glide slope.**
- ◆ Hold **200 km/h** on approach.
- ◆ *Verify F/D* enabled.
- ◆ Set *A/P* & *F/D* approach mode switch.
- ◆ Give command to the *A/P* or fly the *F/D* manually.
- ◆ Ensure landing gear down below **100m AGL**.
- ◆ **DH: Go around no lower than 30m AGL without airfield in sight.**

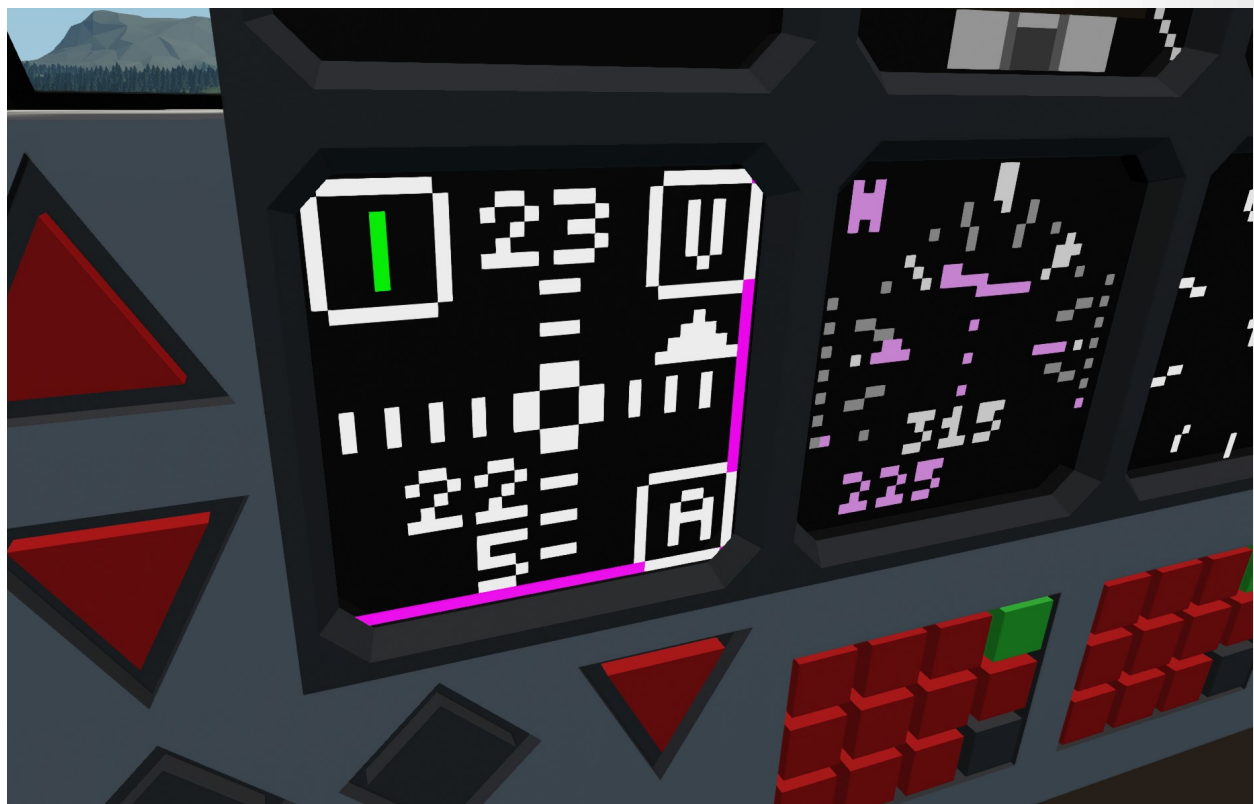


Figure 10: Nav decoder #1 and the HSI in ILS mode

## 9 Emergency procedures

### 9.1 Disorientation

Look at the *ADI* and level off. Tune a nav decoder to channel *0 (zero)* – this channel is available for navigation emergencies to find the nearest beacon. Fly to this beacon and figure out where you are.

### 9.2 Engine flameout mid-air

- ◆ Verify engine master switch **set**.
- ◆ Verify “*fuel xfer from reserve*” switch **set**.
- ◆ Verify “*fuel xfer to reserve*” switch **not set**.
- ◆ Verify throttle **>40%**.
- ◆ Engine start button: **hold**.
- ◆ If tachometer shows **<1,5hz, EJECT!**

### 9.3 Fire

- ◆ Find a place to land **ASAP**.
- ◆ If not possible to reach in 2 minutes, **EJECT!**

## 10 Operating limitations

### 10.1 Airframe and engine

- Maximum crosswind **15 m/s**.
- Maximum taxi speed **60 km/h**.
- Maximum indicated airspeed for landing gear **450 km/h**.
- Minimum cruise speed **200 km/h**.
- Minimum control speed **160 km/h**.
- Engine outside air temperature range **-20° C~+40° C**.
- Sustained load factor range **0,0 G to 4,5 G**.

## 10.2 Instrumentation

### Airspeed indicator

Marking	IAS	Remark
White arc	150~200 km/h	Speed range with reduced effect of control surfaces.
Green arc	180~250 km/h	Acceptable approach speed range.
Yellow arc	250~500 km/h	Cruise speeds not suitable for approach.
Red line	500 km/h	Never exceed.

### Altimeter

- Operational range **0m AGL~10 000m AGL.**