ELITE Simulation Solutions
Model: iGATE G500, G600, G1K
Qualification and Approval Guide (QAG)

Advanced Aviation Training Device

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FAA APPROVED QAG
Signature and Date

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Date: 2019.10.15 12:45:57 -04'00'

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Compliance Statement

This Qualification and Approval Guide (QAG) provides a detailed description of all the required components, features, functions, and capabilities for the ELITE Simulation Solutions Model iGATE G500 and G600 series advanced aviation training device (AATD). This includes any optional airplane configurations with quality color pictures and diagrams. This QAG is provided by ELITE Simulation Solutions to clearly describe and verify the required functionality of this aviation training device platform confirming its suitability for airman training and experience. The information as described in advisory circular AC 61-136B, *FAA Approval of Aviation Training Devices (ATD) and Their Use for Training and Experience* is provided within this document. This includes listing all of the required qualifying items, functions, and capabilities. A valid FAA Letter of Authorization (LOA) specifying the credit allowances must accompany the training device when utilized for satisfying airman training or experience requirements specified in 14 CFR §61 or 141.

ELITE Simulation Solutions must provide a detailed operations manual with each aviation training device model provided. This will include how to properly start, operate, and shut down the trainer. This must include how to operate and maintain the trainer as originally designed and tested. ELITE Simulation Solutions will ensure that the operator of this training device is familiar and proficient with all the features and capabilities of this trainer, and how to correct any malfunctions that may occur.

The operator of this aviation training device is expected to become proficient in it operation before using it to satisfy any pilot experience requirements specified in the code of federal regulations. This includes maintaining its condition and functionally. This ATD must be maintained to its original performance and functionality, as demonstrated during the original FAA functional evaluation. This trainer cannot be used to log pilot time unless all the components of the trainer are in normal working order.

Only the airplane configurations approved for these models can be utilized when satisfying FAA experience or training requirements. Any additions, changes, or modifications to this model, or the associated configurations, must be evaluated and approved in writing by the General Aviation and Commercial Division. This does not prohibit software updates that do not otherwise change the appearance of the systems operation. Operators who use these trainers to satisfy FAA pilot training or experience requirements specified in part 61 or 141 are obligated to allow FAA inspection ensuring acceptable function and compliance.

Any questions concerning FAA approval or use of ATDs should be directed to the General Aviation and Commercial Division.

Aviation Training Device (ATD) Description and Pictures

The ELITE Simulation Solutions model iGATE G500 and G600 series is based on the dimensions and layout of a production piston powered (SEL, complex and twin engine) airplane (Model G500 series) and turbine (single and twin engine) airplane (Model G600 series). This trainer closely represents the overall functionality, performance, and instrumentation for such airplanes. The platform consists of a flight deck, instrument panel, avionics panel, and associated flight and instrument controls. A combination of hardware and software components are assembled and functionally checked by ELITE Simulation Solutions. All hardware components are designed and installed so the flight deck has the appearance and feel of an actual airplane.

The iGATE AATD provides a realistic flight deck design, avionics interface, and reliable hardware/software performance. This platform provides an effective training environment for students and pilots in training. This includes the ability to accomplish scenario based flight training activities, instrument procedures and experience, pilot proficiency evaluations, simulated equipment failure, emergency procedures, and facilitates increased pilot competency.

The Model iGATE AATD received the first FAA Letter of Approval in 2003. The G1000 version was approved in 2006. The iGATE (acronym for “integrated General Aviation Training Environment”) is available in the open or closed cockpit, single or dual pilot configuration and piston and turbine performance formats.

The following pictures illustrate various available iGATE cockpit formats, avionics and navigation equipment. Specific and detailed instrument panel layouts, switches, throttle quadrants, optional avionics and navigation equipment are shown beginning page 26, **List of Airplane Configurations**.

Image 1: iGATE Model G500 SEL Open Cockpit representing a Cessna 172 (single pilot) with GNS 430W

Image 2: iGATE Model G500 SEL representing a Cessna 172 with E500 AHRS and GNS 530W

Image 3: iGATE Model G500 SEL representing a Cessna 172 with GNS 430W

Image 4: iGATE Model G500-G1K SEL representing a Cessna 172 with G1000

Image 5: iGATE Model G500 SEL representing a Piper Archer

Image 6: iGATE Model G500 SEL representing a Piper Arrow with GNS 430W

Image 7: iGATE Model G500 SEL representing a Piper Arrow with E500 AHRS

Image 8: iGATE Model G500 SEL representing a Piper Seneca Twin with GNS 430W

Image 9: iGATE Model G600 SEL representing a SE Turbine Pilatus PC-12 w/EFIS & GNS 530W

Image 10: iGATE Model G1000 SEL representing a Baron G58 Twin Open Cockpit

Image 11: iGATE Model G500 MEL representing a DA-42

Image 12: iGATE Model G500 SEL representing a Baron 58 Twin Closed Cockpit

Image 13: iGATE All Models Cockpit Enclosure

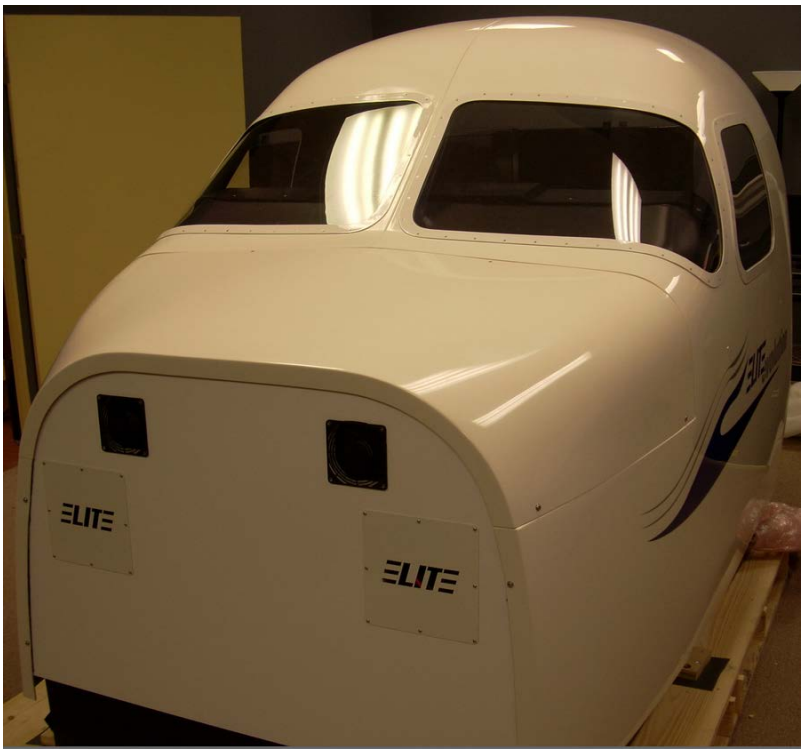
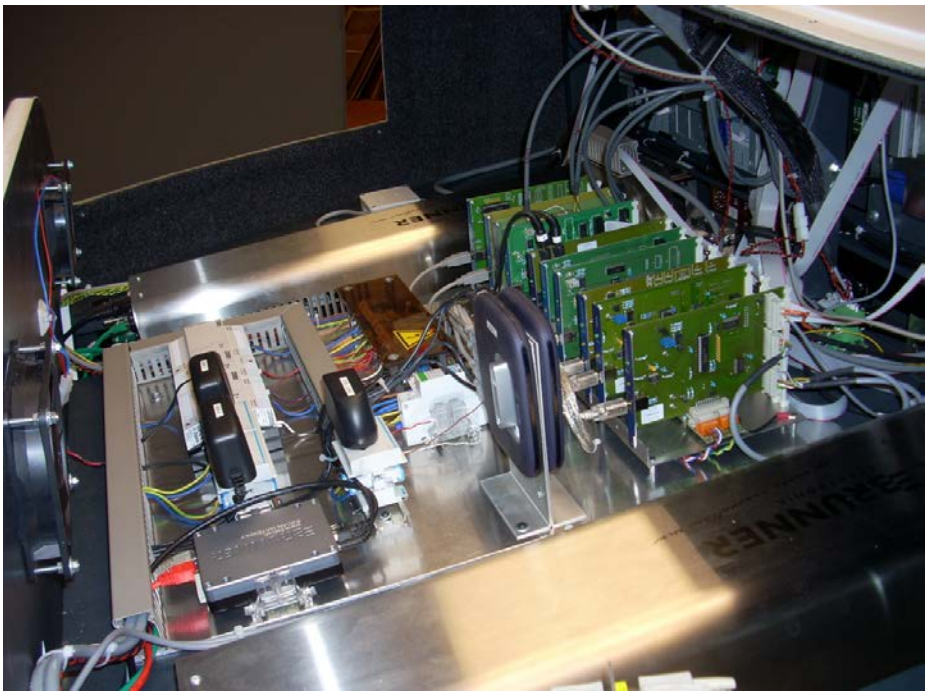


Image 14: iGATE Hardware Controllers (Masks, Switches, Flight Controls and Avionics)*
*(CANBUS-style configuration and optional control loaders shown)



Hardware and Software Components List

Item	Component Name	Manufacturer	Model #	Version #	QTY	Details
01	ELITE AATD Software (flight simulation engine)	ELITE Simulation Solutions	n/a	v5.x through v9.x (XTS)	1	ELITE Proprietary software for the aircraft models, instructor station and basic visual system. Version 9 is the most recent. Software used to create and control aircraft performance data, instrumentation, navigation, visuals, sound, weather functions and Instructor Station controls. Also included is ELITE's sim-to-app software to wirelessly communicate with user iPads and EFB software (not provided).
02	Flight Control System	ELITE Simulation Solutions. Optional Control Loading by Brunner AG, Switzerland	n/a	n/a	1	Controls includes physical control switches for Flaps, Pitch Trim, Gear Handle, fuel selector, rudder trim, cowl flaps, pitot heat, light switches (nav, strobe, taxi/landing, avionics master, dual magnetos, dual starter switch, left & right alternator, battery master, microphone PTT button, & dual fuel boost, etc. Optional control loading for pitch, roll and yaw are provided by Brunner AG.
03	Avionics	ELITE Simulation Solutions, Garmin, Reality XP or Flight 1 Tech	n/a	n/a	1	iGATE series AATDs use King Sliver Crown Plus-style avionics with OEM Garmin or Garmin-style GPS WAAS (GNS or GTN). G1000 avionics are either Garmin OEM or Flight 1 Tech virtual G1000 software.
04	Rudder Pedals/Brakes	ELITE Simulation Solutions	n/a	n/a	1	Durable metal construction includes differential toe braking.
04	Computer System	Jetline Systems or Other Brand (OTS) Windows PC or MacIntosh	n/a	n/a	1	Specifications used: Windows 7 or 10, NVIDIA brand openGL or comparable graphics card, Intel, AMD or Mac Processor. Windows OS & other required software licenses are provided by computer manufacturer. External visual system computers MUST be provided and configured by ELITE.

5	Instrumentation Display Monitors	Samsung or other brand OTS display monitor	n/a	n/a	2 or 3 as rqd	OTS 17&15 LED monitors as required or widescreen as applicable to aircraft being flown.
6	External Display TVs (Optional)*	Samsung or other OTS brand LED Commercial TVs	n/a	n/a	1, 3 or 5	LED commercial TVs with HDMI and/or Display Port cable connections to the computer. Options include one, three, or five external display screens.
7	External Display Visual Scenery Software (Optional)	ELITE or Lockheed Martin Prepar3D	n/a	n/a	1	ELITE native visual scenery or optional Lockheed Martin Prepared 3D.
8	Instructor Station Monitor	Samsung, LG, or other OTS brand monitor. Optional iPad	n/a	n/a	1	Standard OTS monitor mounted on instructor pole, separate IOS desk or tablet.
9	ELITE Pilot Deck or Cockpit Enclosure Components (optional)	ELITE Simulation Solutions & Florida Stainless Fabricators	n/a	n/a	1+	ELITE Pilot Deck components are modular additions that do not affect the controls, software, or hardware components of the flight simulator, but only add the ergonomics, convenience and overall simulator configuration to make the ATD a complete ergonomically correct system. Pilot deck components can include all of the following components or any combination of the following: Sturdy Plat-form Base, Adjustable Seat and Stain-less Steel Seat Base, IOS monitor on a pole mount, Angled wrap-around style 1, 3 or 5 screen monitor mount and stand designed to fit directly onto the custom desk or deck, Cockpit enclosure is a fiber glass replicate of an actual aircraft cockpit.

Design Criteria List

The following section provides the detailed “word for word” listing and design criteria of each of the required items, functions, and capabilities listed in AC 61-136, (See Appendix B for BATD and Appendix C for AATD items) and the operational performance (as applicable) for each of the functions described for the iGATE Model Series airplane ATD.

Basic ATD Requirements

All configurations for this model meet all AC 61-136, Appendix **B** and C requirements.

The **iGATE Model G500, G600 and G1000 series AATD** meets the following Control Input requirements.

(1) The airplane physical flight and associated control systems are recognizable as to their function and how they are manipulated solely from their appearance. These physical flight control systems do not use interfaces such as a keyboard, mouse, or gaming joystick to control the airplane in simulated flight.

(2) Virtual controls are those controls used to set up certain aspects of the simulation (such as selecting the airplane configuration, location, weather conditions, etc.) and otherwise program, effect, or pause the training device. These controls are part of the instructor station or independent computer interface.

(3) Except for the initial setup, a keyboard or mouse is not used to set or position any feature of the ATD flight controls for the maneuvers or training tasks to be accomplished. See the control requirements listed below as applicable to the airplane model represented. The pilot is able to operate the controls in the same manner as it would be in the actual airplane. This includes the landing gear, wing flaps, cowl flaps, carburetor heat, mixture, propeller, and throttle controls appropriate to the airplane model represented.

(4) The physical arrangement, appearance, and operation of controls, instruments, and switches closely model the airplane represented. This trainer recreates the appearance, arrangement, operation, and function of realistically placed physical switches and other required controls representative of an airplane instrument panel that includes the following:

- Master/battery;
- Magnetos (or inverters) for each engine (as applicable);
- Alternators or generators for each engine;
- Auxiliary power unit (APU) (if applicable);
- Fuel boost pumps/prime boost pumps for each engine;
- Avionics master;
- Pitot heat; and
- Rotating beacon/strobe, navigation, taxi, and landing lights.

(5) Only the software evaluated by the FAA is available for use on this computer system. Note: This does not prohibit software updates that do not otherwise change the appearance of the systems operation.

The **iGATE Series aircraft** models meet the following additional airplane physical flight and airplane systems controls:

(1) A **self-centering displacement yoke or control stick** that allows continuous adjustment of pitch and bank.

(2) **Self-centering rudder pedals** that allow continuous adjustment of yaw and corresponding reaction in heading and roll.
(3) **Throttle or power control(s)** that allows continuous movement from idle to full-power settings and corresponding changes in pitch and yaw, as applicable.
(4) **Mixture/condition, propeller, and throttle/power control(s)** as applicable to the make and model of airplane represented.
(5) Controls for the following items, as applicable to the category and class of airplane represented:

- Wing flaps,
- Pitch trim,
- Communication and navigation radios,
- Clock or timer,
- Gear handle (if applicable),
- Transponder,
- Altimeter,
- Carburetor heat (if applicable), and
- Cowl flaps (if applicable).

The **iGATE Series aircraft** models meet the following **Control Input Functionality and Response Criteria:**

(1) Time from control input to recognizable system response is without delay and does not appear to lag in any way. ELITE Simulation Solutions verifies that the **iGATE Series aircraft** meets this performance requirement.

(2) The control inputs are tested by the computer software at each session startup, and displayed as a confirmation message of normal operation or a warning message if the transport delay time or any design parameter is out of tolerance. It is not possible to continue the training session unless the problem is resolved and all components are functioning properly. This test considers all the items listed in the display and control requirements.

The **iGATE Series aircraft** models meet the following **Display Requirements:**

(1) The following instruments and indicators are replicated and properly located, as appropriate to the airplane represented:

- Flight instruments are in a standard configuration, represented as traditional “round dial” or “AHRS” flight instruments, or as an electronic primary flight instrument display (PFD) and multi-function display (MFD) with reversionary and back-up flight instruments.
- A sensitive **altimeter** with incremental markings each 20 feet or less, operable throughout the normal operating range for the make and model of airplane represented.
- A **magnetic direction indicator**
- A **heading indicator** with incremental markings each 5 degrees or less, displayed on a 360 degree circle. Arc segments of less than 360 degrees are selectively displayed as applicable to the M/M of airplane represented.
- An **airspeed indicator** with incremental markings as shown for the M/M airplane represented; airspeed markings of less than 20 knots need not be displayed.
- A **vertical speed indicato**r (VSI) with incremental markings each 100 feet per minute (fpm) for both climb and descent, for the first 1,000 fpm of climb and descent, and at each 500 fpm climb and descent for the remainder of a minimum ±2,000 fpm total display, or as applicable to the M/M of airplane represented.

• A **gyroscopic rate-of-turn indicator** or equivalent with appropriate markings for a rate of 3 degrees per second turn for left and right turns. If a turn and bank indicator is used, the 3 degrees per second rate index must be inside of the maximum deflection of the indicator.
• A **slip and skid indicator** with coordination information displayed in the conventional inclinometer format where a coordinated flight condition is indicated with the ball in the center position. A split image triangle indication or as appropriate for a PFD configuration is used.
• An **attitude indicator** with incremental markings each 5 degrees of pitch or less, from 20 degree pitch up to 40 degree pitch down or as applicable to M/M of airplane represented. Bank angles are identified at "wings level" and at 10, 20, 30, and 60 degrees of bank (with an optional additional identification at 45 degrees) in left and right banks.
• **Engine instruments** as applicable to the M/M of airplane being represented, providing markings for the normal ranges including the minimum and maximum limits.
• A **suction gauge** or instrument pressure gauge, if applicable, with a display appropriate to the airplane represented.
• A **flap setting indicator** that displays the current flap setting. Setting indications should be typical of that found in an actual airplane.
• A **pitch trim indicator** with a display that shows zero trim and appropriate indices of airplane nose down and nose up trim, as would be found in the actual airplane.
• **Communication radio(s)** with a full range of selectable frequencies displaying the radio frequency in use.
• **Navigation radio(s)** with a full range of selectable frequencies displaying the frequency in use and capable of replicating both precision and nonprecision instruments, including approach procedures (each with an aural identification feature), and a marker beacon receiver. Examples include an instrument landing system (ILS), non-directional radio beacon (NDB), Global Positioning System (GPS), Localizer (LOC) or very high frequency omni-directional range (VOR). Graduated markings as indicated below are present on each course deviation indicator (CDI) as applicable. The markings include:
  - One-half dot or less for course/glideslope (GS) deviation (i.e., VOR, LOC, or ILS), and
  - Five degrees or less for bearing deviation for automatic direction finder (ADF) and radio magnetic indicator (RMI), if installed.
  - If equipped with a Primary Flight Display (PFD) and/or Multifunction Flight Display (MFD), the flight and navigation information and guidance replicates the avionics manufactures same scales and navigation information presentation.
• A **clock** with incremental markings for each minute and second, or a timer with a display of minutes and seconds,
• A **transponder** that displays the current transponder code.
• F**uel quantity indicator(s)** that displays the fuel remaining, either in analog or digital format, as appropriate for the make and model of airplane represented.

(2) All instrument displays listed above are visible during all flight operations. All of the displays provide an image of the instrument that is clear and:

(a) Does not appear to be out of focus or illegible
(b) Does not appear to "jump" or "step" during operation.
(c) Does not appear with distracting jagged lines or edges.
(d) Does not appear to lag relative to the action and use of the flight controls.

(3) Control inputs are properly reflected by the flight instruments in real time and without a perceived delay in action. Display updates or actions show all changes (within the total range of the replicated instrument) that are equal to or greater than the following values:

(a) Airspeed indicator: change of 5 knots.
(b) Attitude indicator: change of 2 degrees in pitch and bank.

(c) Altimeter: change of 10 feet.
(d) Turn and bank: change of ¼ standard rate turn.
(e) Heading indicator: change of 2 degrees.
(f) Vertical speed indicator (VSI): change of 100 fpm.
(g) Tachometer: change of 25 rpm or 2 percent of turbine speed.
(h) VOR/ILS: change of 1 degree for VOR or ¼ of 1 degree for ILS.
(i) ADF: change of 2 degrees.
(j) GPS: change as appropriate for the model of GPS based navigator represented.
(k) Clock or timer: change of 1 second.

Note: Airplane configurations with PFD and/or MFD displays are representative of those avionics systems and the associated instrument display information.

(4) **Flight Displays reflect proper dynamic behavior of the airplane represented**. Examples: a VSI reading of 500 fpm reflects a corresponding movement in altitude, and an increase in power reflects an increase in the rpm indication or power indicator.

The **iGATE Series aircraft** models meet the following **Flight Dynamics requirements:**

(1) Flight dynamics are comparable to the way the airplane represented performs and handles.

(2) Airplane performance parameters (such as maximum speed, cruise speed, stall speed, and maximum climb rate) are comparable to the airplane represented. A performance table is provided for each airplane configuration for sea level and 5,000 feet, to verify the appropriate performance. (or 6,000 feet can be used. 25,000 feet should will be used for turboprop or turbojet performance)

(3) Airplane vertical lift component changes as a function of bank comparable to the way the airplane represented performs and handles.

(4) Changes in flap setting, slat setting, or gear position is accompanied by the appropriate changes in flight dynamics comparable to the way the make and model of airplane represented performs and handles.

(5) The presence and intensity of wind and turbulence is reflected in the handling and performance qualities of the simulated airplane and is comparable to the way the airplane represented performs and handles.

f. <u>The iGATE Series AATDs meet the following Instructional Management Requirements:</u>

The instructor is able to pause the system at any time during the training simulation for the purpose of administering instruction or procedural recommendations.

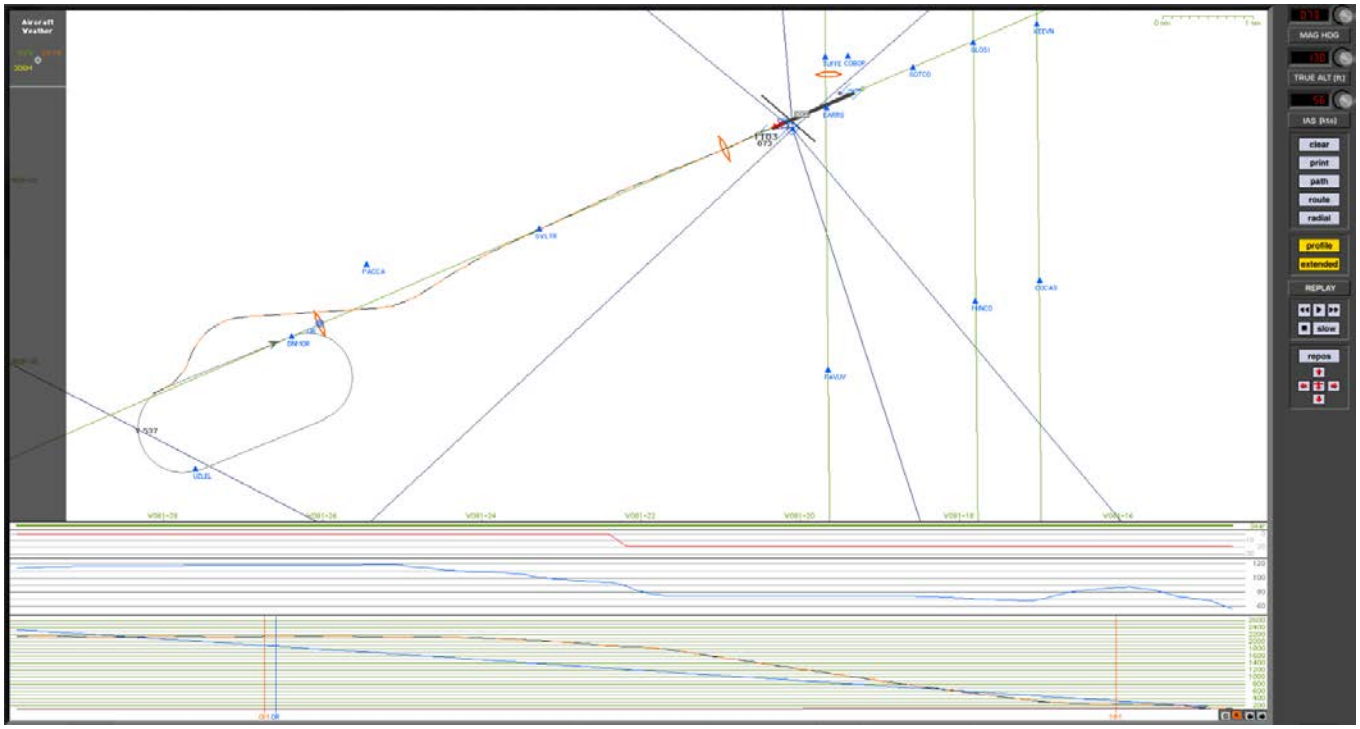
(2) If a training session begins with the “airplane in the air” and ready for the performance of a particular procedural task, the instructor can manipulate the following system parameters independently of the simulation:

- Airplane geographic location,
- Airplane heading,
- Airplane airspeed,
- Airplane altitude, and
- Wind direction, speed, and turbulence.

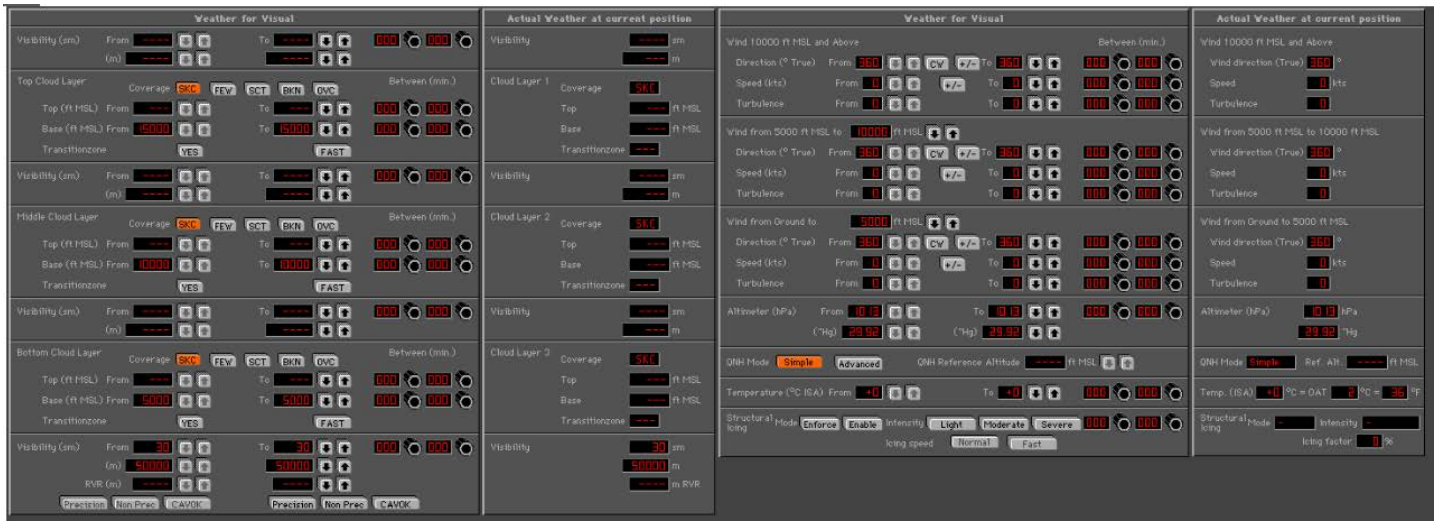
(3) The **system is capable of recording** both a horizontal and vertical track of airplane movement for the entire training session for later playback and review.

(4) The instructor can disable any of the instruments prior to or during a training session and is able to simulate failure of any of the instruments without stopping or freezing the simulation to affect the failure. This includes simulated engine failures and the following airplane systems failures: alternator or generator, vacuum or pressure pump, pitot static, electronic flight displays, or landing gear or flaps, as appropriate.

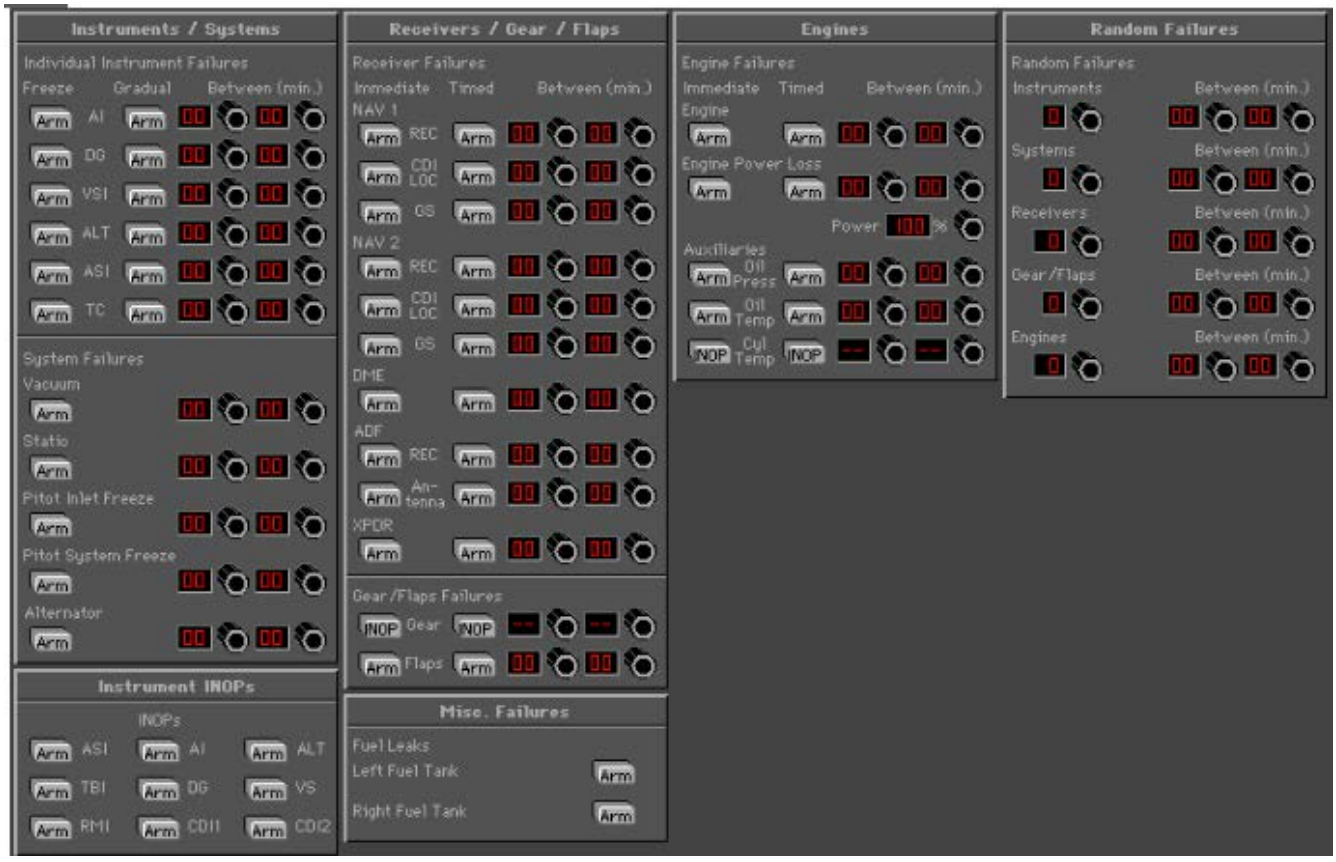
(5) This ATD has an available **navigational database** that is local (within 25NM) to the training facility location. All navigational data is based on **procedures as published per 14 CFR part 97.** This device uses the database from the FAA National Flight Data Center and/or Jeppesen to support the instrument approach and navigation capabilities.



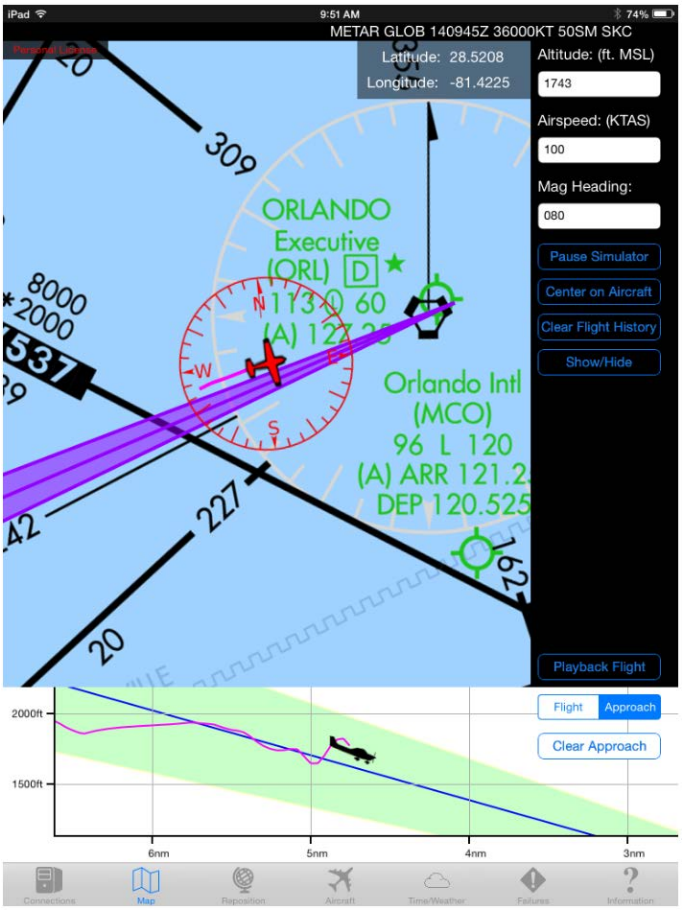
ELITE IOS – Map Page with AC track and approach profile view



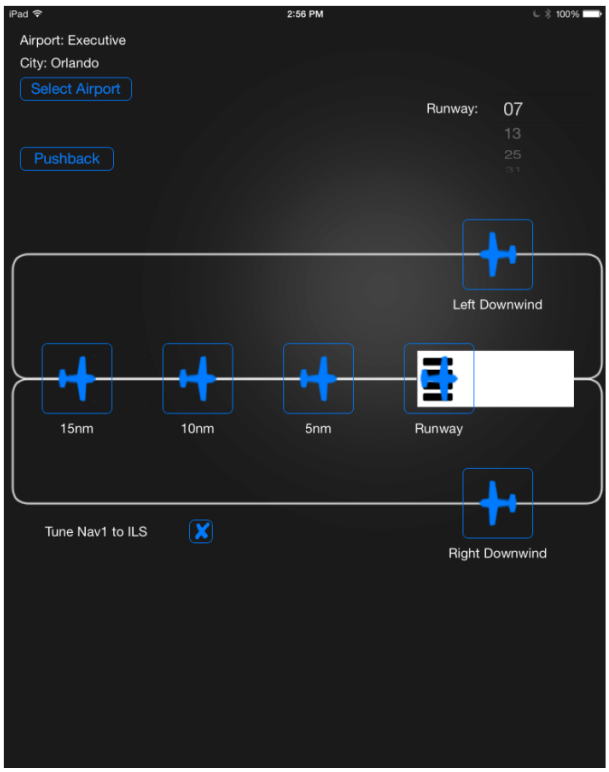
ELITE IOS – Weather Control Page



ELITE IOS – Malfunctions Page

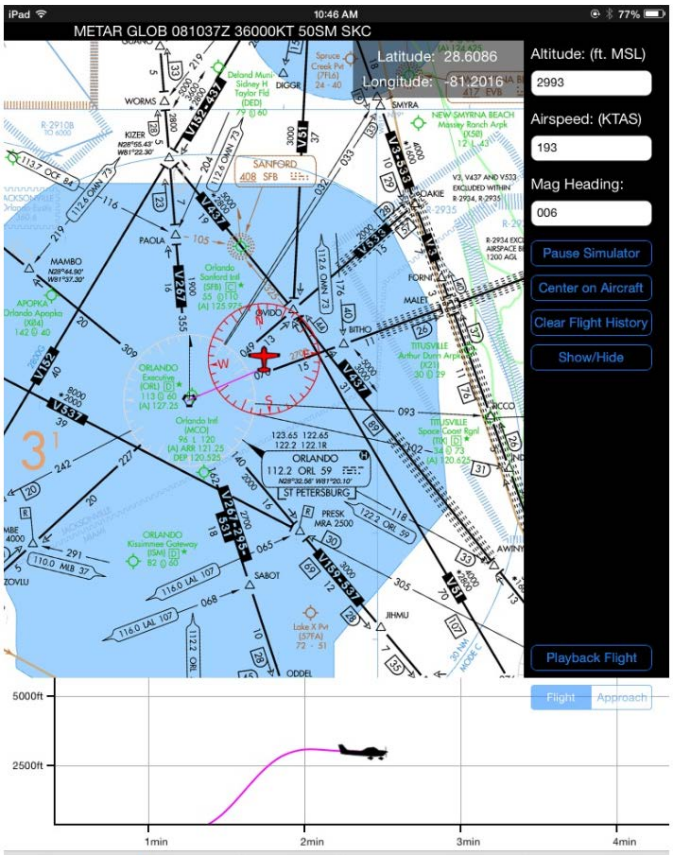


ELITE IOS MAP (SimControlX for iPAD – optional)

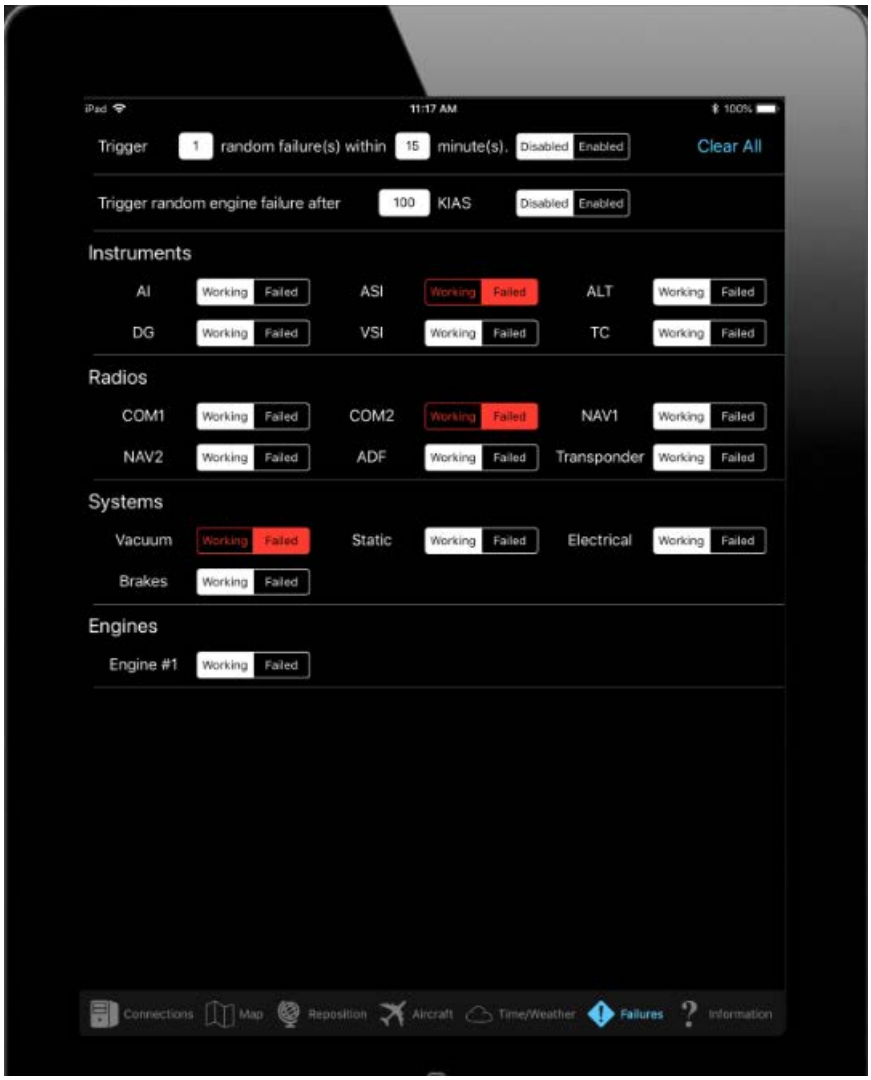


ELITE IOS AC Preposition (SimControlX for iPAD – optional)

ELITE IOS Weather Control (SimControlX for iPAD – optional)



ELITE IOS IFR Enroute Chart (SimControlX for iPad – optional)



ELITE IOS Malfunctions (SimControlX for iPAD – optional)

Advanced ATD Requirements

All configurations**,** as noted in AC 61-136, Appendix C meet the following *additional* AATD design criteria.

The **iGATE G500, G600 and G1000** models have the following additional AATD features and components.

(1) A realistic shrouded (enclosed) or unshrouded (open) flight deck design and instrument panel arrangement representing a specific model airplane flight deck.

(2) Cockpit knobs, system controls, switches, and/or switch panels in realistic sizes and design appropriate to each intended function, in the proper position and distance from the pilot's seated position, and representative of the category and class of airplane being represented.

(3) Primary flight and navigation instruments are appropriately sized and properly arranged that exhibit neither stepping nor excessive transport delay.

(4) A **digital avionics** panel (or PFD & MFD).

(5) A Global Positioning System **(GPS) navigator** with moving map display.

(6) A **Two-axis autopilot** is installed, and, as appropriate, a flight director (FD). (If standard equipment)

(7) **Pitch trim** (manual or electric pitch trim) is available permitting indicator movement either electrically or analog in an acceptable trim ratio.

(8) Has An **independent visual system**, panel, or screen that provides realistic cues in both day and night VFR and IFR meteorological conditions to enhance a pilot's visual orientation in the vicinity of an airport including:

- Adjustable visibility parameters; and
- Adjustable ceiling parameters.

(9) A fixed pilot seat appropriate to the airplane configuration, including an adjustable height and an adjustable forward and aft seat position.

(10) **Rudder pedals** secured to the cockpit floor structure or to the floor beneath the device in proper relation to cockpit orientation.

(11) A **push-to-talk switch** on the control yoke.

(12) A **separate instructor station** permitting effective interaction without interrupting the flight in overseeing the pilot's horizontal and vertical flight profiles in real time and space. This includes the ability to:

(a) Oversee tracks along published airways, holding entries and patterns, and Localizer (LOC) and glideslope (GS) alignment/deviation (or other approaches with a horizontal and vertical track).
(b) Function as air traffic control in providing vectors, etc., change the weather conditions, ceilings, visibilities, wind speed and direction, create light/moderate/ or severe turbulence, and icing conditions.
(c) Invoke failures in navigation and instruments, radio receivers, landing gear and flaps, engine power (partial and total), and other airplane systems (pitot static, electric, vacuum pump, etc.).

List of Airplane Configurations

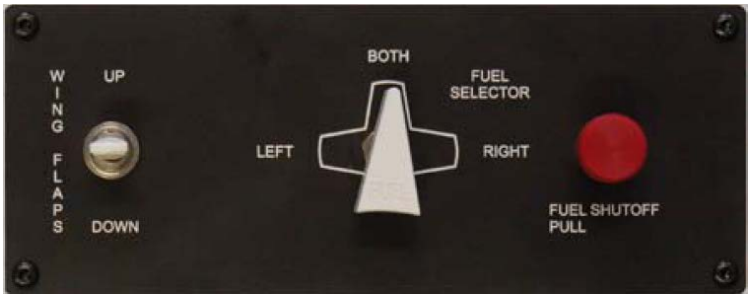
The iGATE (integrated General Aviation Training Environment) Model Series G500 (Piston) and G600 (Turbine) are very versatile and flexible training platforms regarding the availability of aircraft and combination of avionics and navigation systems available. The design concept behind iGATE is that it can serve as a multi-aircraft category trainer via simple exchanges of masks, switches, throttles and aircraft software models. The Configuration Matrix below shows aircraft and possible configuration of controls (with or without control loading), instruments (from DG /RMI, EFIS or AHRS), GPS WAAS units (430W, 530W, GTN 650, GTN 750, and G1000) and models available with OEM Garmin GNS/GTN equipment. Aircraft instrument panels and switches are shown below the Matrix.

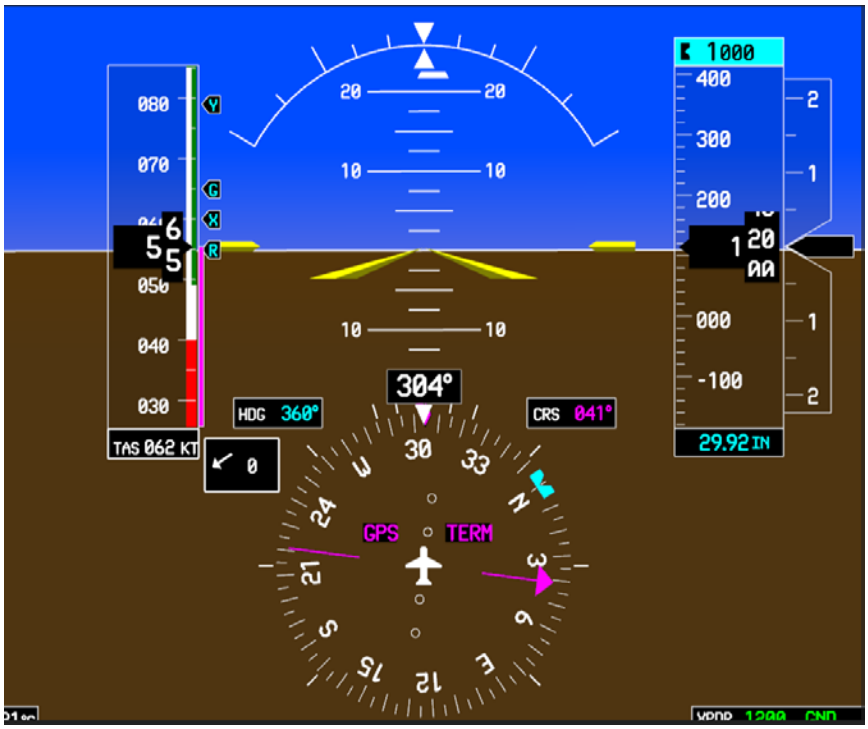
ELITE iGate Configuration Matrix

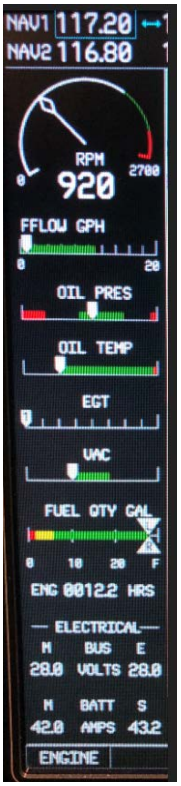
as of 1 October 2019

	Controls		Control Type		Instrumentation: Analog					GPS				OEM
Available Aircraft	Single	Dual	Spring	C/L	DG	RMI	H S I	EFIS	AHRS-E500	430W	530W	Garmin GNS	Garmin GTN	Garmin G1000
ANALOG:														
Cessna 172R	✓	✓	✓	✓	✓	✓	–	–	✓	✓	✓	✓	✓	–
Cessna 172RG	✓	✓	✓	✓	✓	✓	✓	–	✓	✓	–	✓	✓	–
Cessna 182S	✓	✓	✓	✓	✓	✓	✓	–	–	✓	–	✓	✓	–
Beech Bonanza A36	✓	✓	✓	✓	✓	✓	✓	–	–	✓	✓	✓	✓	–
Piper Arrow IV	✓	✓	✓	✓	–	✓	✓	–	✓	✓	–	✓	✓	–
Piper Archer III	✓	✓	✓	✓	✓	✓	–	–	–	✓	✓	✓	✓	–
Beech Duchess 76	✓	✓	✓	✓	✓	✓	✓	–	–	✓	–	✓	✓	–
Beech Baron 58	✓	✓	✓	✓	✓	✓	✓	–	–	✓	–	✓	✓	–
Piper Seneca III	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	–
Beech King Air B200	✓	✓	✓	✓	–	✓	✓	✓	✓	✓	–	✓	✓	–
Pilatus PC-12	✓	✓	✓	✓	–	✓	✓	✓	–	✓	✓	✓	✓	–
GLASS (Garmin G1000):														
Cessna 172S G1000	✓	✓	✓	✓	–	–	–	–	–	–	–	–	–	✓
Cessna 182 G1000	✓	✓	✓	✓	–	–	–	–	–	–	–	–	–	✓
Diamond DA40	✓	✓	✓	✓	–	–	–	–	–	–	–	–	–	✓
Diamond DA42	✓	✓	✓	✓	–	–	–	–	–	–	–	–	–	✓
Beech Baron G58	✓	✓	✓	✓	–	–	–	–	–	–	–	–	–	✓

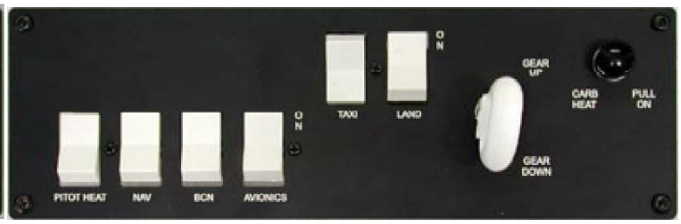
a) Cessna 172R Instrument Panel w/ DG, ADF, VOR, ILS




080
070
060
050
040
030
TAS 062 KT
HDG 360°
304°
CRS 041°
1000
400
300
200
100
000
-100
29.92 IN
GPS
TERM

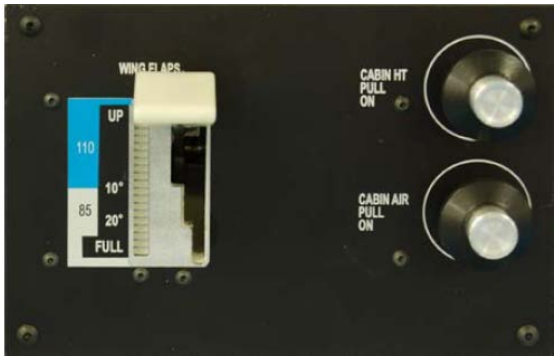

NAV1 117.20
NAV2 116.80
RPM
920
FFLOW GPH
OIL PRES
OIL TEMP
EGT
VAC
FUEL QTY GAL
ENG 0012.2 HRS
ELECTRICAL
BUS VOLTS
BATT AMPS
ENGINE

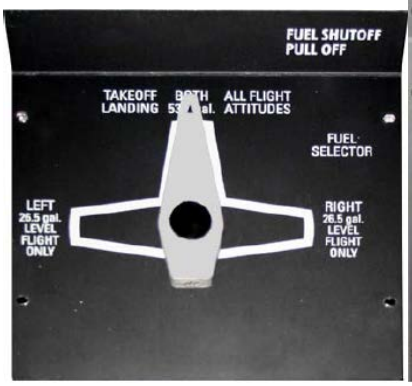
b) Cessna 172 RG Instrument Panel w/ DG, ADF, VOR, ILS

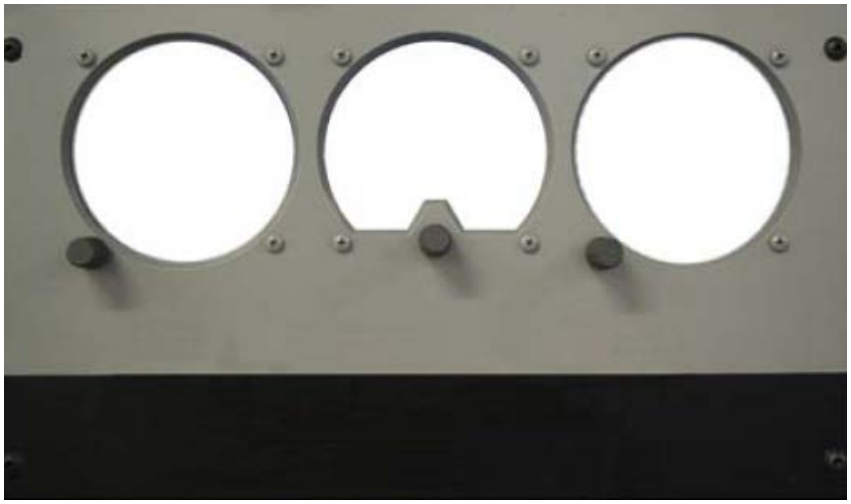


c) Cessna 172 G1000

Cessna 172 G1000 (continued)

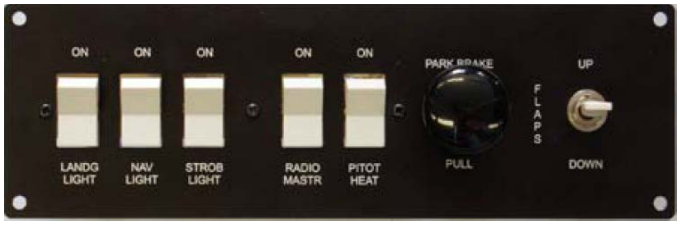




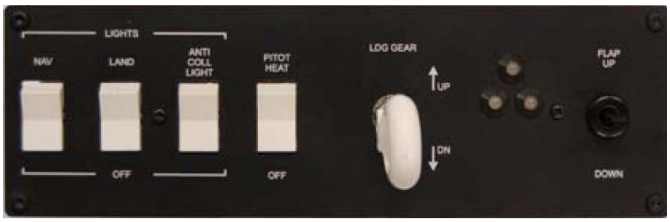


d) Cessna 182 S Instrument Panel w/ DG, ADF, VOR, ILS

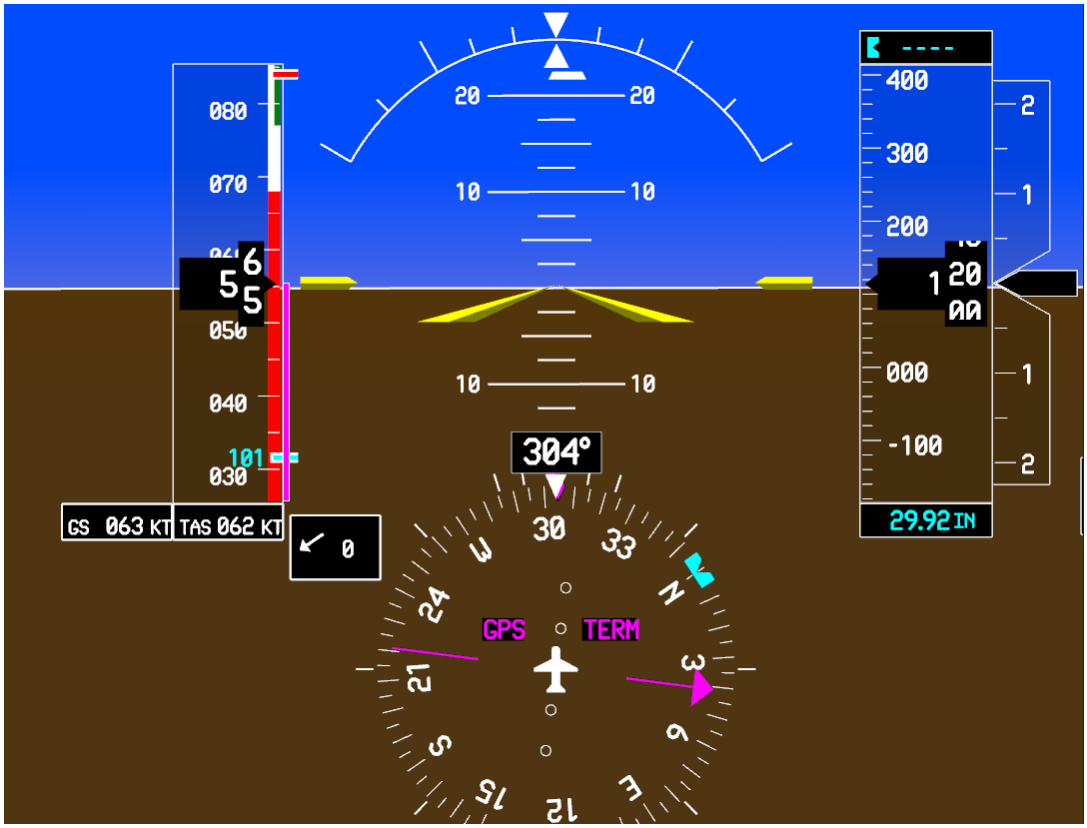
e) Archer III Instrument Panel w/ DG, ADF, VOR, ILS



f) Arrow IV Instrument Panel w/ HSI/RMI, ADF, VOR, ILS



g) Baron 58 Instrument Panel w/ HSI/RMI, ADF, VOR, ILS


080
070
056
040
030
101
GS 063 KT
TAS 062 KT
0
20
10
304°
W
30
33
N
24
GPS
TERM
21
3
S
15
12
E
6
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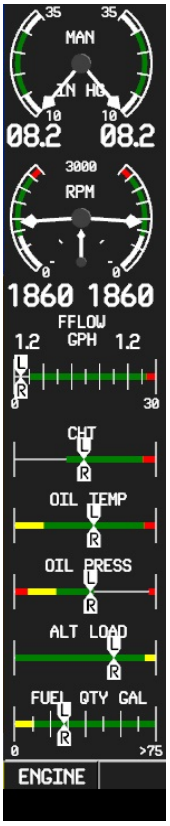
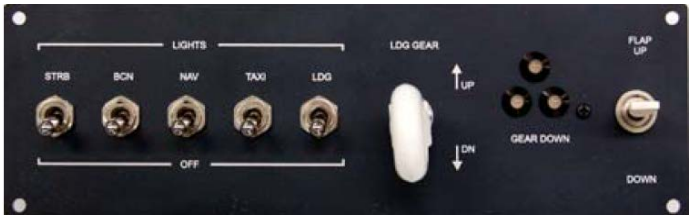
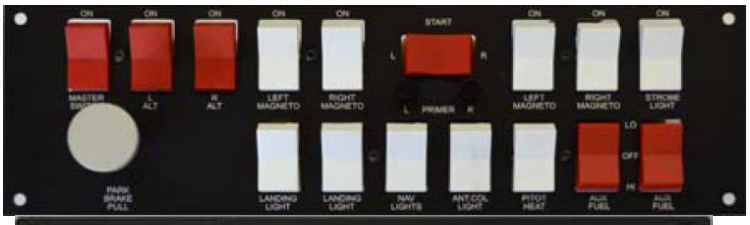
200
000
-100
29.92 IN
2
1


MAN
IN HG
08.2
08.2
RPM
1860
1860
FFLOW
GPH
1.2
1.2
CHT
OIL TEMP
OIL PRESS
ALT LOAD
FUEL QTY GAL
ENGINE

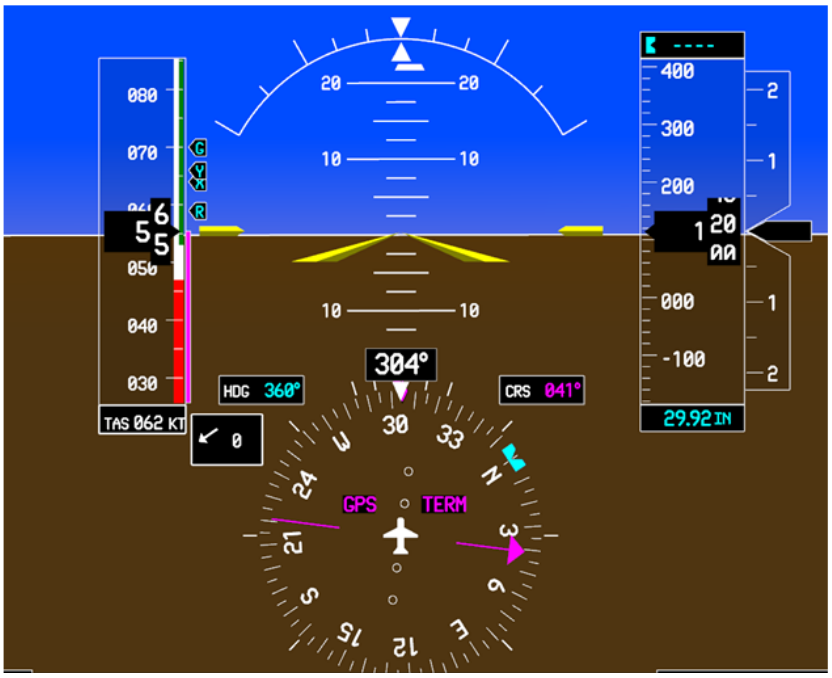
h) Bonanza A36 Instrument Panel w/ DG/ADF, VOR, ILS

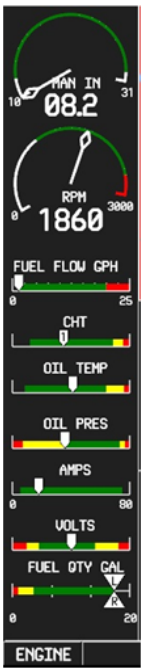


i) Seneca III Instrument Panel w/ HSI/RMI, ADF, VOR, ILS

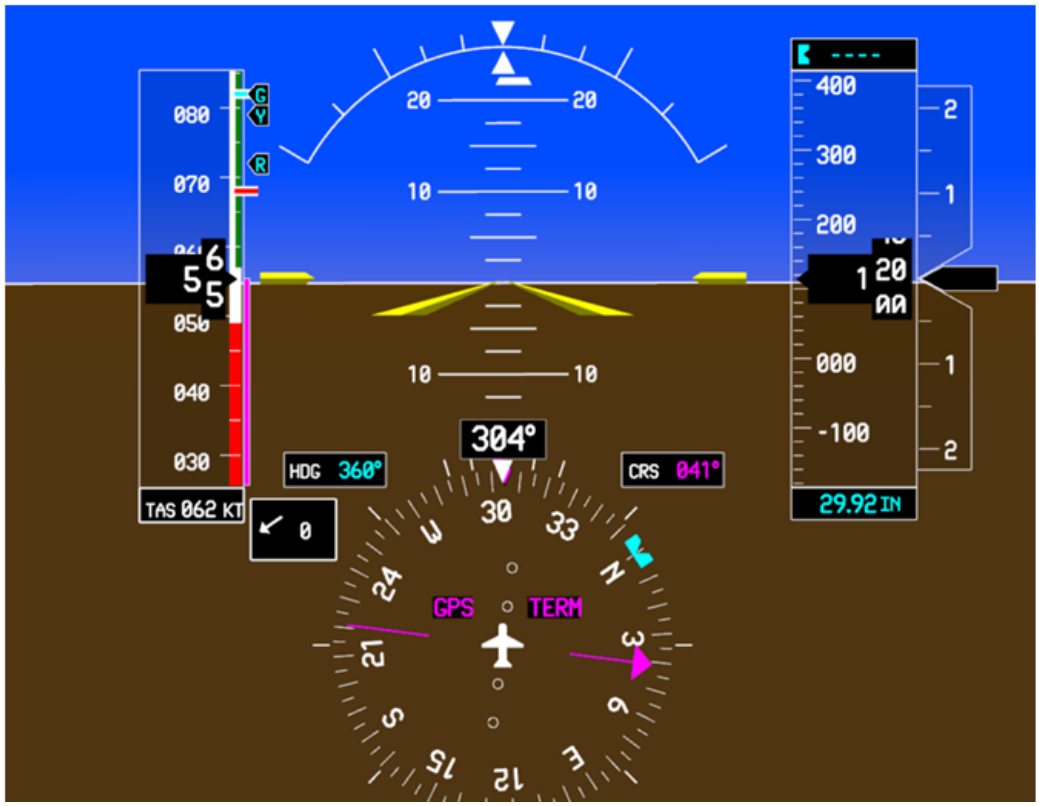


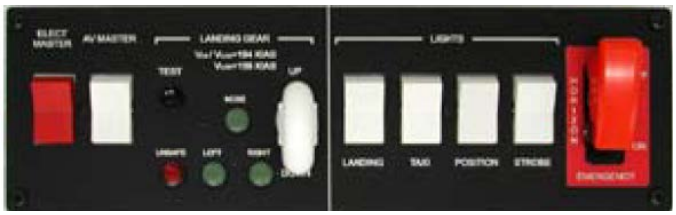
j) Diamond DA-40 (glass only)





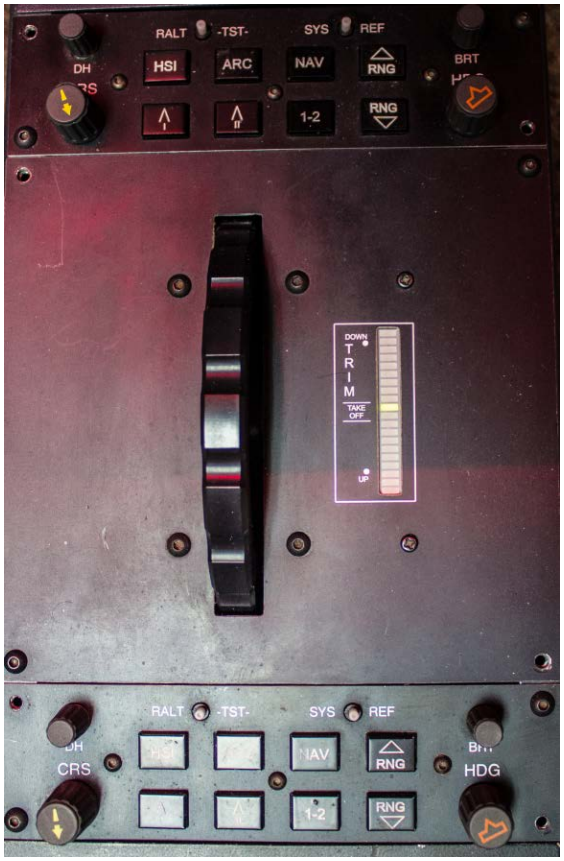
k) Diamond DA-42 (glass only)



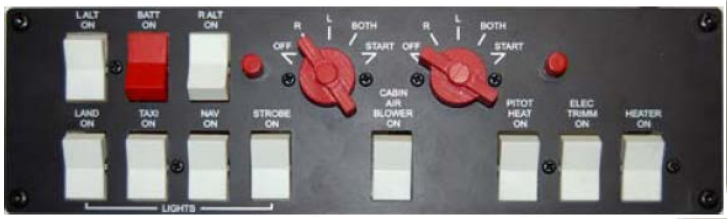


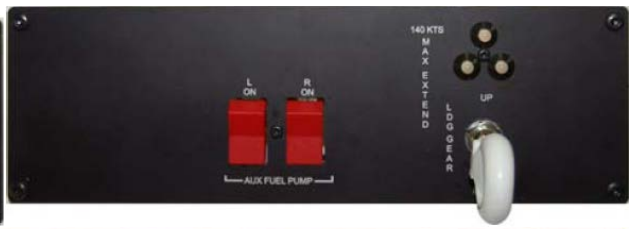
l) Pilatus PC-12 Instrument Panel w/ EFIS

PC-12 (continued)



m) Beech Duchess Instrument Panel w/ EFIS





n) King Air Instrument Panel w/ EFIS

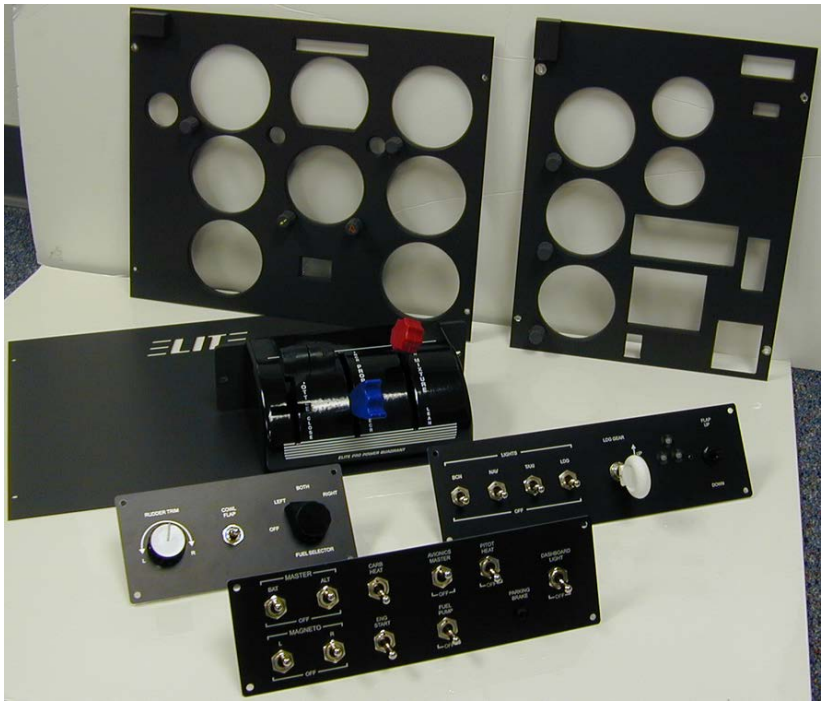

ELEVATOR TRIM
AILERON TAB
LEFT
RIGHT
FLAP
APPROACH
FEATHER
FUEL CUT OFF


ENGINE
AVIONICS
LIGHTS
WARNINGS
WEATHER
FLIGHT
ELECTRICAL
FURNISHINGS


STBY PUMP
ENGINE
CROSSFEED
FUEL QUANTITY
AUX TRANS
AUTO
NO
TRANSFER
LEFT
AUXILIARY
RIGHT
DIM
BRT


CABIN PRESS DUMP
RUDDER BOOST
ELEV TRIM
RUDDER TAB
LEFT
TEST
OFF
YAW DAMPER
HSI
ARC
NAV
CRS
HDG
CABIN ALT
RATE

o) Representative iGATE Mask, switches and throttle for specific aircraft aircraft models.



p) iGATE rudder pedals with proportional toe braking; dual and single pilot

q) Optional Avionics Configurations: King Silver Crown – style avionics.

Audio Panel / Marker Bcns

Transponder

DME

Nav Com (1 and/or 2)

ADF

Flight Director

EFS-40 (Electronic Flight Information System). Optional equipment for Piper Seneca III, King Air B200 and Pilatus PC-12 aircraft configurations.

Directional Gyro (DG w/ADF). Available with C172R, C172RG, C182S, A36, Archer III, Duchess 76, Baron 58, and Seneca III

E500 AHRS (Attitude, Heading Reference System) with representative instrument panel mask
Available with C172R, C172RG, Arrow IV, Seneca III, King Air B200 & PC-12.

r) Optional Navigation Equipment: (iGATE uses OEM Garmin equipment or virtual engineered versions).

Garmin GNS 430W:

Garmin GNS 530W:

Garmin GTN 650:

Garmin GTN 750:

Airplane performance table for sea level *and* 6,000 feet (25,000 for turbojet).

A/C PERFORMANCE TABLE (for airplane configurations available)

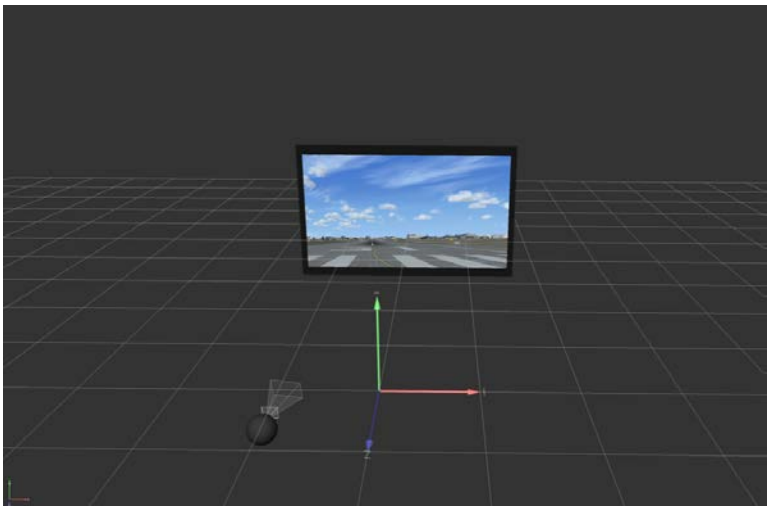
Airplane Model	Vso kts	Vs1 kts	Vx kts	Vy kts	Best Glide Speed kts	Va kts	Vne kts	Vmc kts	KTAS at Cruise @ 75% power setting	Rate of climb (fpm) at best rate (Vy), at full power or as recommended.	Single Engine Climb rate (at Vyse)
DA040	49	52	66	67	76	108	178	N/A	SL 145 kt	SL 1070 fpm	N/A
	6,000 feet→								120 kt	560 fpm	N/A
C172R	33	44	60	79	65	99	163	N/A	SL 111 kt	SL 715 fpm	N/A
	6,000 feet→								113 kt	425 fpm	N/A
C172S	40	48	62	74	65	105	163	N/A	SL 112 kt	SL 725 fpm	N/A
	6,000 feet→								116 kt	470 fpm	N/A
C172RG	42	50	67	84	73	106	164	N/A	SL 145 kt	SL 800 fpm	N/A
	6,000 feet→								140 kt	550 fpm	N/A
C182S	36	43	63	80	65	110	175	N/A	SL 128 kt	SL 915 fpm	N/A
	6,000 feet→								134 kt	620 fpm	N/A
Archer	45	50	64	76	75	113	154	N/A	SL 120 kt	SL 600 fpm	N/A
	6,000 feet→								126 kt	330 fpm	N/A
Arrow	55	60	78	90	105	118	183	N/A	SL 133 kt	SL 650 fpm	N/A
	6,000 feet→								135 kt	450 fpm	N/A
Bonanza	61	68	78	96	110	140	205	N/A	SL 160 kt	SL 950 fpm	N/A
	6,000 feet→								168 kt	700 fpm	N/A
DA-42	56	62	86	79	84	126	194	68	SL 137 kt	SL 1060 fpm	180 fpm
	6,000 feet→								155 kt	900 fpm	100 fpm
Dutchess	60	70	71	85	95	132	194	65	SL 147 kt	SL 1300 fpm	220 fpm
	6,000 feet→								162 kt	900 fpm	90 fpm
Seneca	60	66	78	92	91	136	195	66	SL 158 kt	SL 1300 fpm	210 fpm
	6,000 feet→								175 kt	SL 1200 fpm	180 fpm
Baron	74	84	92	105	120	156	223	81	SL 188 kt	SL 1750 fpm	510 fpm
									200 kt	1300 fpm	100 fpm
PC-12	67	95	120	130	116	158	240	N/A	SL 229 kt	1700 fpm	N/A
	25,000 feet→								253 kt	570 fpm	N/A
King Air	75	99	100	121	135	181	259	86	SL 249 kt	SL 2250 fpm	500 fpm
	25,000 feet→								279 kt	800 fpm	n/a

NOTE: Standard atmosphere and gross weight is used for performance.

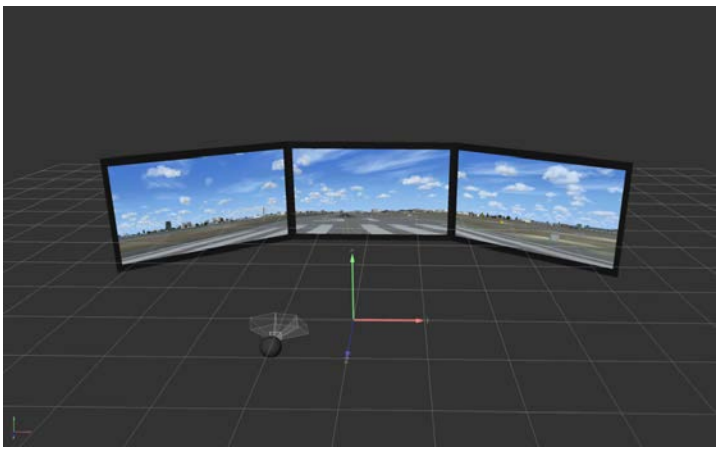
Visual System Description and Configurations

The ELITE iGATE series of aviation training devices three configurations of visual displays consisting of OTS high definition (HD) and Ultra High Definition (UHD) commercial TVs. The standard component is the 55 inch TV in landscape mode. Any size TV from 32 inch to 80 inches can be used

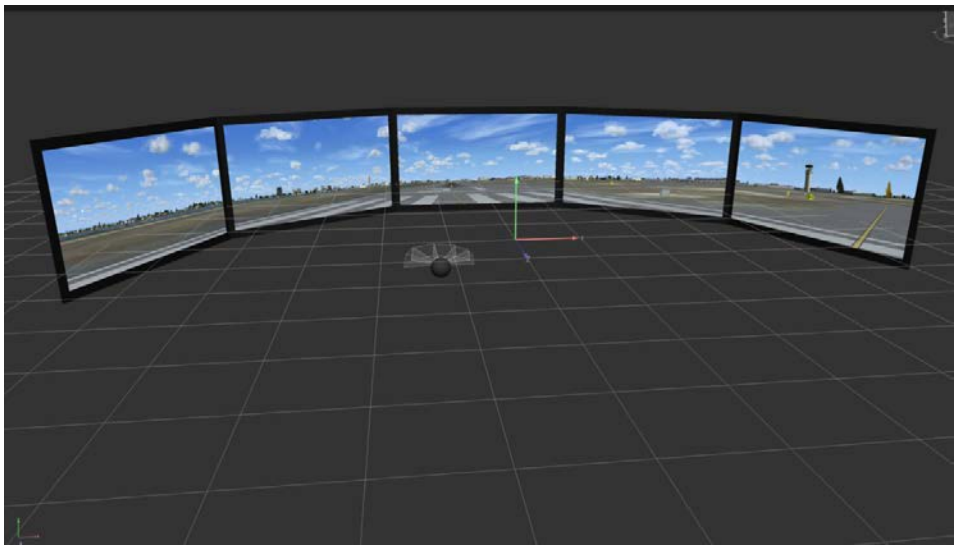
a) iGATE AATD with 1 Screen TV Display System



b) iGATE AATD with 3 Screen TV Display System (120 Degree Field of View)



c) iGATE AATD with 5 HD TV Display Configuration (180 Degree Field of View)



Functions and Maneuvers Checklist

FIGURE 1. AIRPLANE ATD FUNCTION VERIFICATION CHECKLIST

Functions and Maneuvers	Yes, No, or N/A
a. Pre-Takeoff	
(1) Engine start	Yes
(2) Taxi and brake operation	Yes
b. Takeoff	
(1) Run-up and powerplant checks	Yes
(2) Acceleration characteristics	Yes
(3) Nose wheel and rudder steering	Yes
(4) Effect of crosswind	Yes
(5) Instrument	Yes
(6) Flap operation	Yes
(7) Landing gear operation (if retractable)	Yes
c. In-Flight Operations	
(1) **Climb**	
(i) Normal and max. performance	Yes
(ii) One engine inoperative procedures (Multiengine only)	Yes
(2) **Cruise**	
(i) Correct performance characteristics (speed vs. power)	Yes
(ii) Normal and steep turns	Yes
(iii) Approach to stalls, (i.e. stall warning), stalls. Execute from takeoff, cruise, and approach and landing configurations.	Yes
(vi) In flight engine shutdown (multi-engine only)	Yes
(v) In flight engine start (multi-engine only)	Yes
(vi) Fuel selector function	Yes
(3) **Approach**	
(i) Normal (with & without flaps) Check gear horn warning if applicable	Yes
(ii) Single engine approach and landing (multi-engine)	Yes
(iii) Best glide no power	Yes
(iv) Landings	Yes
d. Instrument Approaches	
(1) **Nonprecision**	
(i) GPS and LPV	Yes
(ii) GPS - WAAS (optional)	Yes
(iii) All engines operating	Yes
(iv) One engine inoperative (Multi-engine only)	Yes
(v) Approach procedures (VOR, VOR/DME, LOC procedures on an ILS,	Yes

LDA, RNAV (RNP) or RNAV (GPS) to LNAV, LNAV/VNAV or LPV)	
Functions and Maneuvers	**Yes, No, or N/A**
(2) **Precision**	
(i) ILS	Yes
(ii) GLS (optional)	No
(iii) Effects of Crosswind	Yes
(iv) One Engine Inoperative (Multi-engine only)	Yes
(v) Missed Approach	Yes
(A) Normal	Yes
(B) With One Engine inoperative (Multi-engine only)	Yes
e. Surface Operations (Post Landing)	
(1) Approach and landing roll	Yes
(2) Braking operation	Yes
(3) Reverse thrust operation, if applicable	Yes
f. Any Flight Phase	
(1) **Airplane and Power Plant Systems**	
(i) Electrical, mechanical, or hydraulic	Yes
(ii) Flaps	Yes
(iii) Fuel selector and oil temp/pressure	Yes
(vi) Landing gear (if applicable)	Yes
(2) **Flight Management and Guidance Systems**	
(i) Two axis auto pilot (if standard equipment)	Yes
(ii) Flight director (AATD only) and system displays (if installed)	Yes
(iii) Navigation systems and optional display configurations	Yes
(iv) Stall warning systems avoidance	Yes
(v) Multi-function displays (PFD/MFD) if applicable	Yes
(3) **Airborne Procedures**	
(i) Holding	Yes
(ii) Uncoordinated turns – slipping and skidding demo	Yes
(iii) Configuration and power changes and resulting pitch changes	Yes
(iv) Compass turns and appropriate errors (if installed)	Yes
(4) **Engine Shutdown and Parking**	
(i) Systems operation	Yes
(ii) Parking brake operation (if installed)	Yes
g. Can simulate engine failure, including failures due to simulated loss of oil pressure or fuel starvation.	Yes
h. Can simulate the following equipment or system failures:	
(1) Alternator or generator failure.	Yes
(2) Vacuum pump/pressure failure and associated flight instrument failures.	Yes

(3) Gyroscopic flight instrument failures.	Yes
(4) Pitot/static system malfunction and associated flight instrument failures.	Yes
(5) Electronic flight deck display malfunctions.	Yes
(6) Landing gear (if retractable) or flap malfunctions	Yes
h. Independent Instructor Station Requirements (AATD only)	
(1) Displays published airways and holding patterns.	Yes
(2) Displays airplane position and track.	Yes
(3) Displays airplane altitude and speed.	Yes
(4) Displays NAVAIDs and airports.	Yes
(5) Can record and replay airplane ground track history for entire training session.	Yes
(6) Can invoke instrument or equipment failures.	Yes

The computer component self-checks verifies that all the features of the trainer are in working order. It is not be possible to continue the training session unless the problem is resolved and all the components are functioning properly.

During the initial start-up the ATD has the following **Screen Statement** displayed on the instructor station or visual display before the trainer is used for training.

"*All the flight instruments required for visual and instrument flight rules listed in part 91.205 must be functional at the start of the simulated flight session. Temporary instrument or equipment failures are permitted when practicing emergency procedures. If this simulated flight session will be used for instrument experience or currency requirements, the visual component must be configured to Instrument Meteorological Conditions [IMC] during the simulated flight session, including execution of instrument approaches from the final approach fix until reaching Decision Height [DH], Decision Altitude [DA], or Minimum Decent Altitude [MDA] as appropriate*."

Notice: Any changes or modifications to this training device that have not been reviewed, evaluated, and approved in writing by General Aviation and Commercial Division will terminate FAA approval.