AeroTrain Corp. has gone through an evolutionary process from a modest start in 1995 as a dba (doing business as) company named ‘Systems Solutions’ to a Michigan-incorporated company in April 2001 as ‘Avitek Engineering Corporation’. The company name was changed to the current name ‘AeroTrain Corp.’ in 2006 to show our total focus on aircraft training products.

With a customer base spread in 23 countries, AeroTrain is your one-stop source for aircraft maintenance training equipment needs. We have sound expertise in developing standard and customized training-aids for aircraft systems training.

Our expertise includes design and development of training-aids for avionics, aircraft engines, aircraft systems, instruments, and electrical systems relevant to aircraft maintenance training. We have made substantial investments over the last eight years in the development of multimedia computer based training (CBT) courseware. Consequently, we have a very wide range of CBT modules that cover almost all major topics taught in a typical aircraft maintenance training program.

Besides supplying training aids, AeroTrain Corp. also offers consulting services for the development of Federal Aviation Administration (FAA) Part 147 and European Aviation Safety Agency (EASA) part 147 approved curricula for aircraft maintenance training schools. We have recently begun offering our consultation services to universities for the establishment of undergraduate degree programs in Aerospace Engineering, and in Avionics Engineering.

We look forward to expanding our customer base and are continuously striving to improve our product quality and capabilities, to ensure on-time deliveries, and to provide excellent after sales support.
AeroTrain Corp. is always willing to undertake development of customized training products. If you did not find a product in this catalog that you were looking for, please contact AeroTrain to discuss your requirements. We do offer training solutions tailored to your specific needs.

**CUSTOMIZED TRAINING SOLUTIONS**

- Turnkey establishment of AMT programs
- Development of special-purpose CBT courseware
- Design and development of aircraft-specific training aids
- Consultation for training facilities design and establishment

**CURRICULUM DEVELOPMENT**

- Curriculum Guide
- Daily Lesson Plans
- Lecture Presentations
- Tests/Exams with answer sheets
- Lab Exercises
- School Policy and Procedures manual

AeroTrain Corp. has in-house expertise to develop students’ notes, and lecture plans as needed by our customers. Please contact us for more information.

**TRAINING IMPROVEMENT CONSULTATION**

- Customized courses for teaching staff
- Gap analysis and training improvement recommendations
- Consultation for establishing FAA Part 147 compliant training program
- Consultation for establishing EASA Part 147 compliant training program

AeroTrain can assist you in improving the quality of your aviation training program by reviewing your current methods and resources, and suggesting new methodologies and learning resources to enhance the quality of your training program.
We offer a wide selection of avionics trainers, which are configured using the real avionics equipment from renowned manufacturers like Honeywell Signal (Bendix/King), Garmin, Dynon, Aspen, etc. These trainers can be used for a real operational demonstration and for thorough explanation of the avionics equipment for communication, navigation, identification, flight management, weather, terrain awareness, and automatic flight controls. These trainers are configured and wired identical to aircraft installations and several avionics maintenance tasks can be performed on these trainers using the standard avionics test equipment, and the comprehensive manuals supplied with the training equipment.

The training products include several versions of instruments trainer. From conventional flight and engine instruments to most recent electronic flight instruments system (EFIS), and engine-indicating and crew-alerting system (EICAS). The instruments trainer frame uses a well-designed proprietary mechanism that allows free movement in roll, pitch, and yaw to simulate various attitudes of an aircraft.

Our autopilot trainer is a unique product, which comprises of a true three axes flight controls completely integrated with the control surfaces of a large model plane with control linkages and control surfaces as in real aircraft.

The above-mentioned trainers may be supplemented with optional comprehensive Computer Based Training (CBT) courseware that covers all topics that must be taught as per FAA, FCC, or EASA requirements.

- Avionics Trainer (Standard)
- Avionics Trainer (Enhanced with H.S.I system)
- Aircraft GPS Trainer
- Airborne Weather Radar Trainer
- Flight Management System (FMS) Trainer
- Avionics Databus Trainer
- ADS-B Transponder Training System
- Mode S Transponder Training System
- HSI System Trainer
- ADI and HSI System Trainer
- Aircraft Comm-Nav Trainer
- ADF Trainer
- Mode A/C Transponder System Trainer
- DME Trainer
- Instrument Landing System (ILS) Trainer
- RNAV trainer
- Instruments Trainer
- Instruments Trainer with EFIS and EMS
- EFIS Trainer (Basic)
- EFIS Trainer (Advanced)
- EFIS Trainer - Glass Cockpit
- Electronic Engine Monitoring System (EMS) Trainer
- EICAS Training System
- Autopilot Trainer (Basic)
- Three-axes Autopilot Trainer
- Advanced Autopilot Trainer (Interfaced with Model Aircraft)
- Autopilot Trainer with EFIS
The Model APT-01, Two-axis (roll and pitch) digital autopilot trainer is based on an EFIS with autopilot interface, usually found in light aircraft. The Model APT-01 can serve the purposes of training students on new generation of digital autopilots, as well as familiarizing the students with the essential features of EFIS. The interface to the EFIS results in autopilot operation in the following modes:

- Heading Mode
- Ground Track Mode
- Turn-Around Mode
- GPS Navigation Mode
- VOR Navigation Mode
- Localizer Tracking Mode
- GPS Steering Mode
- Altitude Mode

The Model APT-01 is fitted with roll and pitch servos that drive simulated control surfaces (ailerons and elevator) mounted on a vertical standing panel. The Autopilot mode of the EFIS display presents a comprehensive menu to teach the students how to setup and test the autopilot system. The set-up and maintenance features include:

- AP Status Display
- Roll/Pitch Servo Calibration
- Servo Testing
- Roll/Pitch Servo Torque Setting
- Roll/Pitch Servo Sensitivity Setting
- Roll/Pitch Servo Deflection Setting
- Aircraft Bank/Pitch Limits Setting

The students will also learn how to update the EFIS/Autopilot firmware using a computer interface.

The autopilot derives the Attitude and Heading Reference System (AHRS) information from built-in sensors. The AHRS sensors include:

- Three solid-state gyrometers
- Three solid-state accelerometers
- Three solid-state magnetometers

The EFIS Display has the following characteristics:

- Display Type: LCD, TFT (Thin Film Transistor)
- Backlight: at least 800 nits
- Size: 7.0” diagonal (178 mm)
- Resolution: 854 x 480 color pixels

The EFIS Display includes the following:

- Horizon line, pitch and roll indicators
- CDI/Glideslope Indicators
- Stabilized heading tape and digital readout
- Turn rate indicator
- Digital Altitude
- VSI
- Elevator trim indicator
- Winds aloft arrow
- Angle of attack (AOA) indicator
- Airspeed digital readout, and trend
- Bugs to mark a desired heading, airspeed, or altitude.
- Slip/skid ball
- Altimeter setting display
- Clock/timer
- Autopilot Status Indicator
- OAT
- G-Meter
- Voltmeter
- Timer

Power: 110V AC or 220V AC at 60/50 Hz, single phase.

Computer Based Training (CBT):
A CBT package, covering the topics relevant to Autopilot and EFIS, is provided free of charge with the trainer.
The autopilot trainer model APT-02 is configured with S-TEC two-axis autopilot. The autopilot trainer is laid out to provide a clear view of the entire system to the students. The autopilot servos are attached to sections of control surfaces to replicate the control surface movements of a real aircraft. The tilt/turn mechanism can effortlessly simulate various flight attitudes.

The trainer provides the students with a good understanding about the following:
• Operating principle of an autopilot
• How feedback signals are generated using gyro and absolute pressure transducer.
• Effect of sensor feedback signals on autopilot operation and control
• Operation of electrical servos
• Interaction between manual control and automatic flight control
• Characteristics of various autopilot modes of operation
• Troubleshooting various electrical faults in the autopilot system
• Mechanical linkages between autopilot servos and control surfaces
• Maintenance and rigging of the mechanical linkages in an autopilot system

A fault insertion panel allows the instructor to insert faults in the system to provide troubleshooting training to the students.

**Included Equipment**
The autopilot trainer includes the following items:
• The Programmer/Computer unit
• Turn Coordinator
• Directional Gyro
• Roll Servo
• Pitch Servo
• NAV/ILS Simulator
• VOR and Localizer indicator
• Pressure Transducer (for simulated altitude)
• Altimeter
• Magnetic Compass

The following documentation is provided with the trainer:
• System Wiring Diagram
• Technical Manual
• User’s / Operating Manual

The trainer is also supplied with a comprehensive Computer-based Training (CBT) courseware to enhance students’ understanding and to provide the essential knowledge about autopilots used in small and large airplanes.
The Model APT-03 Autopilot Trainer is based on a Century 2000 Autopilot. It has a modular design. It may be installed and operated as a roll axis only autopilot, roll and pitch axis, or a roll, pitch, and yaw axis autopilot. The complete Century 2000 is a true 3-axes, flight director/autopilot. The advanced design provides very smooth and precise corrections in aircraft attitude. The flexible design provides the economy of expandability.

**Model APT-03 Standard - Roll Axis Control**
The complete roll axis autopilot features continuous roll/NAV/voltage monitors, heading hold, heading select, NAV, (VOR/RNAV)/LOC/BC anticipative intercept and track automatic soft track, about 45° intercept and all angle intercept with HSI.

**Option 1: Yaw Damper**
The Yaw Damper is a sub-system that enhances directional stability by reducing short-term oscillations in the yaw axis, therefore enhancing passenger comfort. In addition, it maintains coordinated flight during turns. The yaw damper is activated with autopilot engagement but may be operated independently. This expansion may be added to any package.

**Option 2: Pitch Control**
Pitch expansion adds altitude hold, attitude command, electronic altitude hold, G/S capture and track, proportional pitch trim, control wheel steering, continuous pitch/GS monitors, and automatic pitch synchronization to the existing roll section. The pitch axis comes complete with altitude hold, glide-slope grabber circuit, capability for altitude pre-select, automatic and manual electric trim, all certified to the safest standards.

**Option 3: Flight Director**
The flight director expansion computes the necessary roll and pitch attitudes needed to intercept and maintain headings, courses, attitudes, and altitudes. These computations are then displayed through the flight director horizon as steering commands, greatly simplifying instrument flight.

**System Components**: (System configuration depends upon selected options)
- Attitude Indicator / Flight Director
- Directional Gyro/Indicator
- Roll Servo
- Autopilot Computer/Control Unit
- Autopilot Annunciator
- Yaw Servo
- Pitch Servo
- Rate of Climb Indicator
- Moveable Control Surfaces
- Turn & Slip Indicator
- Altitude Pre-selector
- Altitude Sensor

**Fault Simulation**: Instructor’s panel is provided to insert simulated faults in the system for troubleshooting training.

**Power Requirements**: Model APT-03 operates from either 110V / 60 Hz or 220V / 50 Hz mains power.
AeroTrain’s Avionics System Trainer brings the real life experience to the classroom. The trainer provides practical, hands-on training using the real avionics equipment configured and wired just like in an airworthy aircraft. The trainer is designed to give the students a good understanding aircraft’s avionics equipment. Students also develop logical and methodical approach to troubleshoot avionics faults inserted by the instructor. Our standard models include the equipment covering topics generally taught in an avionics curriculum. However, we are always willing to work with our customers to manufacture a customized mix of equipment, specific to our customers’ training needs.

The system comes complete with all wiring, antennas, transmitters, receivers and indicators. The trainer is mounted on a movable stand and comes complete with all instructor’s and students’ manuals.

The trainer is supplied with a portable NAV/COM tester. DME & transponder testers are supplied as optional items.

**Standard Equipment:** Aircraft avionics trainer provides instruction on the following systems:

- Dual NAV. / Comm. Radio
- Transponder
- DME
- Marker Beacon
- Global Positioning System (G.P.S.)
- Altitude Encoder
- Automatic Direction Finder (A.D.F.)
- Instrument Landing System (ILS)
- VOR
- Intercom System
- Headsets (2)
- Audio Panel
- Microphone
- Two NAV Indicators
- ADF Indicator
- Altimeter
- Antennas (LOC, COM, NAV/COM, GPS, DME, XPNDR, ADF) Qty. 7 Total
- Fault Insertion Box
- LCD NAV Display with GPS built in
- 15 ft. extension cable for GPS Antenna
- Tripod stand for mounting GPS Antenna outdoor

In addition to standard equipment, optional equipment may be added to enhance the training capabilities of the trainer. The options are:

- **Option 1:** Addition of RMI to standard equipment
- **Option 2:** Addition of H.S.I. to standard equipment
- **Option 3:** Addition of EHSI system to standard equipment
- **Option 4:** Addition of RNAV to standard equipment
- **Option 5:** Electronic Navigation Display (ND) with RMI, HSI, and Moving Map modes.

The trainer is fitted with a vacuum pump to simulate altitude, and requires only 110V or 220V AC for full operation.
AeroTrain Corp. is dedicated to bridging the gap between classroom instruction and practical, hands-on training. Our Model APT-04 Autopilot/ Automatic Flight Controls Trainer is an excellent resource for teaching the principles of automatic flight controls by demonstration using a complete system that encompasses all the aspects of autopilot and automatic flight controls. Model APT-4 is representative of autopilot systems used on large commercial aircraft.

Model APT-4-A consists of three axes flight control computer, Mode Controller, Mode Annunciator, Pitch / Yaw / Roll servos, Flight Director, and a magnetic-slaved HSI System integrated with cockpit controls and includes control linkages to the control surfaces of a model aircraft.

The visual display of realistic effects enhances the perception and understanding of flight controls.

The trainer, in the standard configuration consists of a large model airplane with all the main control surfaces (rudder, elevator, aileron and trim). Model APT-4-A is equipped with a complete control mechanism linked to a control yoke and rudder pedals. Any movement in control yoke and rudder pedals results in the proportional movement of the control surfaces.

The system may be interfaced with a compatible EFIS system and will accept inputs from a variety of navigation equipment.

The autopilot equipment used in Model APT-04 borrows technology from the flight control systems developed for high-end business jets and commercial aircraft. The simplicity of design and ease-of-use gives instructors and AMT trainees an ideal teaching and hands-on learning resource to fully explore all the features of an advanced autopilot system.

The Model APT-04 Autopilot Trainer is based on Honeywell (Bendix/King) Flight Control System. This autopilot system is an integrated autopilot system combining the functions of the flight computer, mode selector, altitude pre-selector, annunciator and yaw damper into one single system. The system features a manual and automatic trim operation, not found in low-end autopilot systems.

The installed equipment offers smooth performance which is typical of expensive, high-end flight control systems. The finely tuned equipment and sensors incorporated into the system draw upon Honeywell’s significant flight control experience, allowing the system to capture and hold altitudes or an ILS glide-slope with precision resulting in a smooth, attitude-based flight.
Educational Value For Instructors:
• Describe building blocks of a modern autopilot system.
• Demonstrate the function of each sub-system.
• Demonstrate the functionality of flight controls in manual mode.
• Demonstrate the complete functionality of flight controls in autopilot mode.
• Demonstrate how an autopilot system is maintained.
• Introduce faults in the system for students to troubleshoot.

Educational Value For Students:
• Understand the functionality of an autopilot system by actually operating a real system.
• Monitor and measure signals at test points.
• Perform system testing.
• Troubleshoot system faults.
• Remove/install various components.
• Have unlimited and continuous access to autopilot training contents through computer-based training provided free with the system.

Ordering Information:
Model APT-04-A: Advanced Autopilot trainer with a model airplane hook up.
Model APT-04-B: Autopilot trainer with an airplane template hook-up.

Specifications:
**Equipment and LRUs**
- Remote-mounted, magnetic-slaved Directional Gyro
- Flight Computer
- Magnetic Slaving Transmitter
- Roll Servo
- Yaw Servo
- Pitch servo
- Pitch Trim Servo
- Vacuum Pump
- Avionics Blower

**Instrument Panel:**
- Flight Director
- Horizontal Situation Indicator
- Mode selector
- Yaw Mode Selector
- Slaving Control
- Aural warning Horn

**Controls:**
- Control Yoke
- Two Rudder Pedals
- Circuit Breaker Panel
- Switch Panel
- Instructor’s panel for Fault Insertion

**Documentation:**
- System Wiring Diagram
- Technical Manual
- User’s / Operating Manual
- Computer-based Training (CBT)

**Interfacing / Expansion:**
- Interface connectors provided for integration with EFIS, and with our Model AT-01 Avionics Trainer.
Aircraft Global Positioning System Trainer Model AT-03

GPS has become an indispensable aid for airborne, land and marine navigation. Correct usage and effective maintenance of GPS equipment require a good knowledge of GPS principles, operation and equipment circuitry. The GPS trainer provides in-depth knowledge and hands-on experience to maintain and troubleshoot GPS equipment. A fault panel lets the instructor insert commonly encountered faults so that trainees can learn how to troubleshoot and repair the GPS equipment in actual situations.

The GPS Trainer equipment consists of a panel mounted IFR-approved GPS receiver, a GPS antenna, and a GPS signal simulator. A simulator for altitude input is included to provide full navigation and operational capabilities. Optional system components may be added and interfaced to the system which increase its features and capabilities. Some of these optional components include an external course deviation indicator (CDI) or horizontal situation indicator (HSI), autopilot, and external annunciators.

Typically, an altitude input, an external indicator, and external annunciators are required for IFR approach certification. Altitude is used as an aid in position determination when not enough satellites are in view.

The panel mounted GPS receiver unit contains the GPS sensor, the navigation computer, a Gas Plasma Discharge Display, and all controls required to operate the unit. It also includes the data base card which slides into the front panel.

The GPS “patch” antenna is also installed. The GPS unit has outputs to drive the left-right deviation bar of the CDI and HSI. In addition, the NAV mode of the flight control systems may be coupled to the GPS receiver.
All IFR installations require remote annunciators to be mounted in the aircraft panel in order to select and indicate the status of certain functions. En route and terminal IFR certifications require annunciators for message (MSG) and waypoint alert (WPT). Non-precision approach certifications also require a switch / annunciator to select and display when the approach mode is armed or active.

**GPS Functional Features**

- Panel-mount IFR GPS capable of performing GPS approaches
- Easy-to-read map display
- Comprehensive Jeppesen database
- Eight-channel parallel GPS receiver
- “Direct-To” feature for easy navigation
- Altitude input for increased accuracy
- Can be interfaced to external CDI or HSI, RMI, fuel management system, external moving map display, and air data system
- Operates on any voltage 11-33Vdc

- Front-loading database card available in four options - Americas North covering USA, Canada, Latin America; Americas South covering USA, Latin America, South America; Atlantic International and Pacific Intl. database
- Database can store up to 500 user-defined waypoints along with user comments for up to 200 airports
- Capable of B-RNAV compliance for Europe

The GPS Simulator is a one channel, single-frequency (L1) GPS signal generator. The signal generator consists of an RF part that generates the carrier frequency, and BPSK modulates it with the C/A code and navigation signal, which is produced by the digital part of the signal generator. The digital part generates the C/A code and its modulation with a given bit pattern. The navigation data is generated by an external unit and is provided to the unit by a serial line. The serial interface protocol, connected to a computer, can be used to set the PRN number used and to control the signal strength.

**GPS Simulator Features**

- RF Output GPS L1 (1575.42 MHz)
- C/A Codes Gold Codes 1- 1023
- Data format 50 bits/s, GPS frame structure
- Ultra-high frequency stability
- Option to include different oscillators
- Frequency adjustment range 1575.42 MHz +/- 1 kHz
- Signal Power -175dBm - 75dBm
- 2 dB control resolution

The system has built-in provisions for the following digital data inputs:

- Altitude (Gray Code)
- Air Data Computer
- Fuel Management System
- Heading

The GPS Trainer includes computer interface to upload a GPS database for various regions in the world.
The Model AT-05 Flight Management System (FMS) trainer includes the essential features that are part of avionics configuration of newer aircraft. The FMS reduces pilot's workload by integrating the information from various sources like GPS, DME, and VOR. The trainer features include flight plan entry and simulation, position fixing, and lateral & vertical guidance.

The flight management functions are controlled via keyboard on a Control Display Unit (CDU) panel. The High contrast, high resolution, easy to interpret display is designed for high reliability and long service life. The FMS accepts position and velocity information from sensors, and provides control for aircraft's navigation sensors including GPS, data communication, fuel management and radio management.

**FMS Trainer Features:**
- Automatically selects best available DME/DME and VOR/DME measurements from VOR/DME, VORTAC, TACAN and ILS DME units
- External sensor interfaces include Inertial Reference Systems (IRS) or Inertial Navigation Systems (INS)
- Provides advisory Vertical Navigation (VNAV) allowing vertical portions of a flight plan such as altitude constraints, offsets and flight path angles programmed to vertical waypoints to be built in advance
- Navigation Data Bank of a comprehensive worldwide Jeppesen database includes such information as SID and STAR waypoints, approaches, VHF NAVAIDS, airports and runways
- User database allows customization for pilot-specified waypoints and numerous flight plans
- Provides information such as fuel remaining, fuel consumed, gross weight and individual engine consumption
- Frequencies can be entered directly via system's keyboard consolidating management of COMM, NAV, ADF, and transponder radios
- Navigation features include Greenwich Date and Mean Time, Present Position Coordinates, Magnetic Variation, Stored Waypoint Coordinates, Stored Flight Plans, Departure Time/Time Over Last Waypoint, Bearing to Waypoint, Distance to Waypoint, Estimated Time to Waypoint, ETA, Wind Direction and Speed, Desired Track, Drift Angle, Ground Speed, Track Angle, Crosstrack Distance, Vertical Deviation, Range and Time to Altitude Profile Point, Estimated Crossing Altitudes, Target Altitude Range
- Database features include all airports with hard surface runways longer than 2000 feet, all high and low altitude intersections, all on and off airway NDBs, all outer markers, runway thresholds, high altitude jet routes and low altitude airways by name, SID and STAR waypoints by procedure name, GPS and overlay approach patterns
- Option available for full AFIS (Airborne Flight Information System) interface providing two-way messaging, en route weather and flight plan updates, performance management, preflight planning and preflight weather briefings.
All modern military and commercial aircraft are equipped with Horizontal Situation Indicator (HSI) to provide a consolidated display to a pilot for more efficient cockpit resource management. Model AT-10 Aircraft HSI System Trainer is designed to provide hands-on training on a real and operational equipment approved for aircraft installation. The equipment is mounted on a mobile workstation containing Horizontal Situation Indicator, with bootstrap Directional Gyro, Flux Valve, Slaving Accessory, and installation kits. Aircraft quality electrical shielded wiring, cables, connectors, and harness assemblies are installed. All interconnections are of aircraft quality electrical shielded wiring, cables, connectors, and harnesses. The workstation includes a test panel console for testing of HSI System equipment.

Using Model AT-10, Avionics Instructors can effectively teach students on installing, removing, and testing a complete Horizontal Situation Indicator (HSI) system. Students also develop proper understanding and learn how to troubleshoot the equipment.

**Connectivity**
Model AT-10 can be integrated with our Models AT- 20, AT-21, AT-22, and AT-23 for enhanced training features covering the integration of various avionics equipment in aircraft cockpit. This is a unique feature not available from any other manufacturer of avionics trainers. The system can be upgraded to include an EFIS display by adding appropriate interfaces, a control unit, and symbol generator.

**Functional Specifications**
Remote mounted compass system consisting of KI-525A Pictorial Navigation Indicator, KG-102A Directional Gyro, KMT-112 Magnetic Azimuth Transmitter, and KA-51A/B Slaving Accessory. The KI-525A provides a pictorial display of the horizontal navigation situation and also provides manual controls for course and heading datum selection. It also provides outputs for autopilot or flight director, VOR receivers, and additional compass loads. Magnetic Heading and course information from VOR/LOC, GPS, Loran, or RNAV is combined on the KI-525A. KI-525A includes dual glide-slope pointers which are in view only during an ILS approach. KA-51B provides selectable "slaved gyro" or "free gyro" modes which enables manual slaving capability.

**Features:**
- Durable, steel frame, Vertical standing panel with sturdy casters
- Wood shelf
- Accessories storage case
- Adjustable height equipment panels
- Adjustable height test panel
- Avionics panel complete with Honeywell KCS55A system
- Power Supply with voltage and current meters, power cord
- Installation and mounting kit

**Documentation:**
- Technical Reference Manuals
- Students’ Manual
- Wiring diagram

**Computer Based Training**
Model AT-10 is supplied with CBT covering the relevant topics, at no additional cost.
AeroTrain’s Model AT-06 ARINC 429 Trainer is complete and comprehensive equipment to prepare aircraft maintenance engineers and avionics engineers to understand and maintain modern aircraft. ARINC standards are used on virtually all commercial aircraft. ARINC specifications define the standard for transfer of digital data between avionics system elements. The ARINC 429 specification describes how an avionics system transmits information over the unidirectional data bus to other system elements.

Model AT-06 ARINC 429 Trainer simulates ARINC 429 signals at two speeds (12.5 Kbps and 100 Kbps). Words are 32 bits long including a label, parity bit and other fields. The ARINC 429 data words define the units, ranges, resolutions, refresh rates, number of significant bits, pad bits, etc. for the words transmitted by the different avionics system elements. Model AT-06 simulates a variety of avionics equipment including VOR, DME, ILS, ADF, AHRS, Radio Altimeter, INS, FMS, Weather Radar, and Engine parameters.

The software installed on the trainer is an intuitive, graphical data bus analyzer that simplifies the simulation of ARINC 429-based avionics systems. The user-friendly MS Windows-based interfaces allow transmission and reception on ARINC 429 data buses with just a few clicks of the mouse. Then, while the bus is running, data and bus activity can be observed in meaningful engineering units, and can be changed on the fly. The use of Model AT-06 does not require programming expertise, and trainees do not need to write software programs. All they need to do is consult the comprehensive training manual provided with the trainer, to understand the various menu options.

A very powerful and useful feature of Model AT-06 allows users to define or view information through virtual instruments, strip charts or map displays on the monitor screen. The software playback capability allows the re-runs of the data stream to facilitate the instructors and trainees to take a detailed look at the data flow.

Project, data, and hardware configurations may be saved in files and can be reopened. This facility allows the instructors to create various scenarios just once, and use it repeatedly with new students. Students can save unfinished work to later continue from where they had left off.

**Hardware**

The hardware utilizes a rack-mount PC, 17-inch LCD TFT monitor, ARINC 429 interface, laser printer, instructor’s panel, patch panel, and power supply unit. The equipment is installed in two 19-inch racks of 18U height.
Aircraft Data Bus Trainer Model AT-06

Training Bench
The ARINC Trainer hardware along with the instructor panel (to insert simulated faults) is mounted on two 19-inch racks. These racks are mounted on a bench top. The equipment is operated from the front panels and the access to the equipment for maintenance is through the rear doors of the equipment racks. The front panels provide access points for signal measurement and troubleshooting training. Model AT-06 design provides option for upgrading the trainer bench to a fully operational EFIS trainer/simulator just by adding a third rack containing EFIS equipment.

Software
The software works under Windows XP or newer to simulate ARINC channels. The software allows the following primary functions:

• Setup of the ARINC channel
• Setup of labels, label properties, and transmit schedule
• Create various simulated data sets to be transmitted on the ARINC channels.
• Allow real time recording of the signal activity on the ARINC data bus.
• Set up display options
• Set up display filters
• Complete and selective data capture
• Export of the recorded ARINC data to Microsoft Excel work sheet.
• Printing of recorded ARINC data.
• Options for data presentation in various display formats.
• Display the ARINC data as strip chart.
• Display data through virtual instruments on monitor screen.
• Display the ARINC data in a tabular form.

Instructor Panel
The instructor panel allows insertion of faults in the electrical interconnect system for the purpose of simulation. These faults are generated using toggle switches. These fault switches create faults by altering impedance of the ARINC channels, by creating open circuits, and by sinking the signal to ground.

Power Supply
The test bench is powered by 110/220 V AC power source. This power source is further distributed to power the individual equipment. Circuit breakers provide protection to each independent load.

MIL-STD-1553 Bus Option
Model AT-06A has additional features to provide training on MIL-STD-1553 data bus, besides ARINC 429 training.

Documentation:
The trainer is supplied with comprehensive documentation that includes:

• Students’ Training Manual
• ARINC 429 Specifications
• Software Manual
• System Wiring Diagram
• Instructor’s Resource Kit

Computer-Based Training (CBT)
The Model AT-06 is supplied with CBT that covers relevant topics.

Optional Item:
The trainer may be supplied with a standard handheld ARINC 429 Test Set used in the airline industry. This option is intended to give the students an idea how to use a handheld data bus tester to troubleshoot modern avionics equipment.
The Model AT-09 Aircraft Navigation Systems Trainer consists of fully functional aircraft navigational equipment used in a typical general aviation aircraft. The trainer includes secondary radar equipment (Distance Measuring Equipment (DME) and Transponder), and radio navigation equipment (VOR, LOC, GS, MB, and ADF). The Model AT-09 may be upgraded with the optional feature to include satellite navigation (GPS). The trainer is a realistic mock-up of aircraft navigational systems with functions and capabilities that facilitate the following aspects of hands-on training:

- Conduct practical training for flight line tasks like physical removal, installation, operation, and maintenance testing by using ramp tester.
- Perform diagnostic testing as done in an avionics maintenance shop, using real time navigation transmission and reception with a DME/Transponder bench test set.
- Test the equipment using simulated navigation/flight data in compliance with standard technical procedures.

The emphasis in Model AT-09 design is to allow the students to gain hands-on experience.

**Secondary Radar Training**

The DME and Transponder are the secondary radars used for navigation and identification. The Model AT-09 contains both equipment.

**Distance Measuring Equipment (DME)**

The panel-mounted DME has digital readout which displays aircraft’s distance to the selected ground station, groundspeed, and time-to-station. The 200-channel receiver can be either digitally channeled through NAV receiver or can be tuned directly with frequency control knobs. The DME uses a single crystal digital frequency synthesizer.

**Mode A and C Transponder**

A panel-mounted mode A and C transponder is installed in the trainer. Also included is a Digital Encoder. The transponder has digital display which shows the Mode A codes and Mode C altitude. The transponder operates on 28V DC power, and has backlight bezel for easy reading of the panel nomenclature and knobs. The digital encoder can convert simulated static pressure input representing altitudes from -1,000 feet to 35,000 feet with the accuracy within +/-20 feet. The encoder is a generic encoder that will work with all aircraft transponders.

**Students’ Lab-sheet for DME**

The Model AT-09 is supplied with a comprehensive lab-sheet for the students to perform tasks typical to DME testing and maintenance in real aircraft.

**Students’ Lab-sheet for Transponder**

The Model AT-09 is supplied with a comprehensive lab-sheet for the students to perform tasks typical to Transponder testing and maintenance in real aircraft.
DME Testing
The panel-mounted test set is capable of testing and calibrating DME, Transponder, and ARINC568 Digital DME Indicators. The test set can perform several tasks, such as:

- Measuring DME Transmitter Frequency and Power
- Measuring Transmitter Pulse Characteristics
- Measuring Receiver Memory Time
- Measuring Receiver Bandwidth and Sensitivity
- Measuring Pulse Position Decoder Accuracy
- Adjacent Channel Test
- Measuring Accuracy and Tracking
- Measuring Acquisition Time
- Measuring Echo and Co-Channel Performance
- Testing ARINC 568 Digital DME Indicators
- Provision of a -1 nm Range delay, if selected
- Generating DME serial data stream

Transponder Testing
The test set can be used to perform several testing and maintenance tasks, such as:

- Measuring Receiver Bandwidth and Minimum Threshold Level (MTL)
- Measuring Side Lobe Suppression (SLS)
- Measuring Pulse Deviation
- Verification of Interrogator Recovery Time
- Pulse Width Decoder Operation
- Measuring Frequency and Power Output
- Measuring Pulse Shape and Width, Transmitter Droop and Frequency Pulling
- Measuring Transmitter Power (digital display)
- Measuring Identification and Altitude Codes
- Testing ARINC 572 Transponder (local or remote mode)
- Selecting variable or calibrated pulse spacing for P2 and P3 pulses in the plus or minus directions
- Selecting variable or calibrated pulse width from 0.2 µs to 1.85 µs in 0.05 µs steps
- Selecting side lobe suppression (SLS)
- Suppression Recovery through Interference and DBL Interrogation function

Aircraft Radio Navigation System
The Model AT-09 is equipped with radio navigation receivers comprising:

- VHF Omnidirectional Range (VOR)
- Instruments Landing System (ILS), that includes Localizer (LOC), and Glide-slope (GS)
- Marker Beacon (MB)
- Automatic Direction Finder (ADF)

The Aircraft Radio Navigational System is installed on a mobile test stand with a work bench-top, moveable lockable caster wheels. A ramp tester is used for the simulation of radio navigation signals. An ADF simulator is used to provide a radio bearing. The system requires mains voltage (either 110V/60 Hz or 230V at 50/60Hz; all other voltages required for equipment operation are internally generated.

The radio navigation system is equipped with standard general aviation, panel-mounted receivers, antennas, and indicators which include:

- One navigation receiver with GS
- One NAV indicator for VOR/LOC, and GS display
- One MB receiver with outer, middle, and inner marker indicators
- One ADF receiver
- One ADF indicator
- One splitter for VOR/LOC and GS signals
- One NAV antenna
- One ADF antenna
- One MB antenna
Radio Navigation System Testing
The radio navigation system testing is accomplished by using a ramp tester and an ADF simulator to perform testing and maintenance tasks which are realistic representation of the real aircraft experience. The tasks include:
• Testing of navigation receiver for various simulated VOR bearings
• Testing of VOR indicator
• Testing of TO/FROM flags
• Testing of NAV/GS warning flags
• Testing of navigation receiver for various simulated LOC deviations
• Testing of LOC deviation indicator
• Testing of navigation receiver for various simulated GS deviations
• Testing of GS deviation indicator
• Testing of MB receiver for outer, middle, and inner marker reception and indication
• Testing of ADF receiver
• Testing of ADF indicator

Troubleshooting Training
The model AT-09 is equipped with fault simulation panel that can be used by instructors to induce one or multiple faults, to train students in troubleshooting methodology. The fault panel includes 15 fault insertion switches that cover:
• DME channeling, antenna, and power failure faults (4 faults)
• Transponder altitude, antenna, and power failure faults (4 faults)
• Radio navigation faults (7 faults)
Upgrade with GPS
The Model AT-09 is upgradeable with the inclusion of a GPS navigation display.

Computer Based Training (CBT)
The model AT-09 is supplied with a CBT package. The CBT package allows up to 30 perpetual licenses without any license renewal fees. The following CBT titles are provided and installed on the computer:
• Primary and Secondary Radar Systems
• Distance Measuring Equipment (DME)
• Aircraft Transponder System
• VHF Omnidirectional Range (VOR)
• Instruments Landing System (ILS)
• Automatic Direction Finder (ADF)

Documentation
The Model AT-09 is supplied with:
• Student lab-sheets for DME, Transponder, and Navigation System
• Instructor’s Manual (describing learning objectives for each simulated fault and its description)
• Training Manual (describing theory, system block diagrams, and operating instructions)
• Wiring Diagrams (soft and hard copies)

Safety
The Model AT-09 has been designed with students’ safety in mind. The wiring and warning signage is in accordance with standard practices prevalent in the aerospace industry.
All modern military and commercial aircraft are equipped with autopilots for automatic flight control, and Horizontal Situation Indicator (HSI) for navigational information presentation to the pilot. The Attitude Director Indicator (ADI) provides a consolidated and easy-to-read display of aircraft roll and pitch attitudes and command bugs. The Horizontal Situation Indicator (HSI) to provide a consolidated display to a pilot for more efficient cockpit resource management. The HSI and ADI are found in every modern commercial aircraft.

Model AT-11 Aircraft AHRS & HSI System Trainer is designed to provide hands-on training on a real and operational equipment approved for aircraft installation. The equipment is mounted on a mobile workstation containing Horizontal Situation Indicator, with bootstrap Directional Gyro, Flux Valve, Slaving Accessory, ADI, and a simulator box to generate all other required signals needed by the system. All wire harnesses are routed through terminal strips to enable students to measure and monitor electrical signals, and to troubleshoot the instructor-induced faults. Aircraft quality electrical wiring, cables, connectors, and harness assemblies are installed. All interconnections are of aircraft quality electrical shielded wiring, cables, connectors, and harnesses. The workstation includes a test panel console for testing HSI System equipment.

Using Model AT-11, Avionics Instructors can effectively teach students on installing, removing, and testing a complete ADI and HSI system. Students will develop a proper understanding and learn how to troubleshoot the equipment. The trainer also acts as a teaching aid for demonstration of directional and vertical gyros.

**Functional Description**
Remote mounted compass system consisting of Pictorial Navigation Indicator, Remote Directional Gyro, Magnetic Azimuth Transmitter, simulated NAV signals unit, and Slaving Accessory. The ADI system comprises of vacuum driven attitude gyros, and simulated autopilot deviation signal unit. The HSI provides a pictorial display of the horizontal navigation situation and also provides manual controls for course and heading datum selection. The HSI also provides outputs for autopilot or flight director, VOR receivers, and additional compass loads. Magnetic Heading and course information from VOR/LOC, and GPS is combined on the HSI. It includes dual glide-slope pointers which are in view during a simulated ILS approach.

**Features**
- Installed units are actual aircraft equipment
- Durable, metal frame with sturdy casters
- Control Yoke operated roll, pitch, and yaw simulation
- Interface with AT-01 & APT-04 trainers
- CBT included
- Fault insertion module
- Simulated NAV inputs

**Computer Based Training**
Model AT-11 is supplied with CBT covering the relevant topics, at no additional cost.
AeroTrain Model AT-12 Aircraft Radio Altimeter System Trainer is a fully functional radio altimeter system comprising of actual airborne avionics equipment. The terms ‘Radio Altimeter’ and ‘Radar Altimeter’ are used interchangeably and essentially mean the same. They are also abbreviated as “Rad. Alt.” in avionics terminology.

The Model AT-12 Radio Altimeter System Trainer is comprised of the following items:
- Bench-mounted mobile workstation
- Radio Altimeter Transmitter/Receiver
- Radio Height Indicator
- Radio Altimeter Tx and Rx Antennas
- Test Set
- Test Set Antenna Couplers, qty. 2 (Tx and Rx)
- Power Supply
- All necessary wiring harnesses

**Documentation**
The Model AT-12 is supplied with:
- Students’ Lab-sheet
- Instructor’s Manual
- Training Manual
- Wiring Diagram

**Computer Based Training (CBT)**
The model AT-12 is supplied with a CBT package. The CBT package allows up to 30 perpetual licenses without any license renewal fees.

**Features**
- Solid-state Radio Altimeter Receiver/Transmitter Unit (FMCW Modulation)
- Operates on 28 volt DC power
- Has serial digital output for use by other avionics equipment like FMS and Autopilots
- Digital altitude processor for long, drift-free operation
- Rugged, die-cast construction of the Receiver/Transmitter Unit
- Radio Altitude Indicator
- Adjustable Decision Height function provided to alert pilot via lamp and aural tone that the aircraft has descended to a selected altitude
- Self test to enable rapid verification of proper system function
- Standard radio altimeter antenna used in general aviation aircraft
- Aircraft on Ground simulation
- Aircraft in the air simulation
- Fixed, linear variable, and flight profile altitude simulation
- Parametric testing functions
Model AT-20 Navigation and Communication Systems Trainer is designed to provide hands-on training on a real and operational equipment approved for aircraft installation. The equipment is mounted on a mobile workstation containing aircraft navigation/communication electronics radio, indicator, plus two easily removable COMM antenna and the NAV antenna assemblies. All interconnections are of aircraft quality electrical shielded wiring, cables, connectors, and harnesses. The workstation includes a test panel console for bench testing of NAV/COM electronics.

Using Model AT-20, Avionics Instructors can effectively teach students on installing, removing, and testing using live radios and antennas. Students develop proper understanding and learn to troubleshoot the NAV/COM System.

### Features
- Durable, steel frame, Vertical standing panel with sturdy casters
- Wood shelf
- Accessories storage case
- Adjustable height equipment panels
- Adjustable height test panel
- Avionics panel, complete with Allied Signal KX 155 with Indicator
- Microphone and phone jacks
- Installation and mounting kit

### Metering
Metering is provided by a panel mounted digital meter. The meter switch selects the following inputs:

- DC Volts
- Tx/Rx Amps
- IND Amps
- RMS (speaker channel)
- RMS (phone channel)
- RMS (aux audio)
- NAV FLAG (0 to 5 - 1K meter loads)
- NAV DEVIATION (0 to 5 - 1K meter loads)
- GLIDE SLOPE FLAG (0 to 5 - 1K meter loads)
- GLIDE SLOPE DEVIATION (0 to 5 - 1K meter loads)
- TO-FROM FLAG (200 ohm meter load)

The panel has 56 Breakout Jacks for access to a variety of signals and functions.

### Communication Section
- Metering of the supply voltage and current draw
- Microphone input (with mic test function for testing pilot’s mike).
- Key Switch & Lamp Panel speaker (monitors speaker or phone/interphone channels)
- Squelch control and Disable
- Tuning Lamp Indicator
- Serial or Parallel controller selection
- Headphone Output Jack (monitors phone/interphone & aux audio channels)
- Test Point Jacks for - Audio (mic audio Comm input), Audio (mic intercom audio input), Audio (Comm audio out), Audio (sidetone / aux audio out), Audio (speaker audio).

### Documentation
- Technical Reference Manuals
- Students’ Manual
- Wiring diagram

### Computer Based Training
Model AT-20 is supplied with CBT covering the relevant topics, at no additional cost.

### Connectivity
Our Models AT-20, AT-21, AT-22, and AT-23 can be interconnected for enhanced training features covering the integration of various avionics equipment in aircraft cockpit.
Model AT-21 Aircraft Automatic Direction Finder Equipment Trainer is designed to provide hands-on training on a real and operational equipment approved for aircraft installation. The equipment is mounted on a mobile workstation containing aircraft ADF unit, ADF indicator, and ADF loop and sense antenna assembly package. Aircraft quality electrical shielded wiring, cables, connectors, and harness assemblies and easily removable ADF antenna with coaxial cable connections. All interconnections are of aircraft quality electrical shielded wiring, cables, connectors, and harnesses. The workstation includes a test panel console for bench testing of ADF equipment.

Using Model AT-21, Avionics Instructors can effectively teach students on installing, removing, and testing an ADF unit. Students also develop proper understanding and learn how to troubleshoot the ADF equipment.

**Features**

- Durable, steel frame, Vertical standing panel with sturdy casters
- Wood shelf
- Accessories storage case
- Adjustable height equipment panels
- Adjustable height test panel
- ADF Indicator
- Avionics panel complete with Honeywell ADF KR87
- Power Supply with voltage and current meters, power cord
- Installation and mounting kit
- Aircraft Antenna mounted on rotating mechanism

**Test Panel Specifications**
The Automatic Direction Finder Test Panel is engineered for the bench testing of ADF receivers. The panel has a digital meter to monitor input voltage and current, as well as, several output voltage test points. The panel has a built-in speaker for audio monitoring.

The following lists the Model AT-21 panel functions and controls:

- Combined Voltmeter/Ammeter (Digital readout)
- 4-digit thumbwheel frequency selector
- Speaker
- 3-Position Band Switch (low, Medium, High)
- Audio Gain Control Knob
- RF Gain Control Knob
- Fuse for DC Power
- Power On Indicator
- AC Selector (INT. or EXT.) Six panel-mounted jacks
- Five Function Control Switches
- ADF Connector
- RMI Connector

**Documentation**
Technical Reference Manuals
Students’ Manual
Wiring diagram

**Computer Based Training**
Model AT-21 is supplied with CBT covering the relevant topics, at no additional cost.
Model AT-22 Aircraft Transponder System Trainer is designed to provide hands-on training on a real and operational equipment approved for aircraft installation. The equipment is mounted on a mobile workstation containing aircraft transponder unit, built-in indicator, and transponder antenna assembly. Aircraft quality electrical shielded wiring, cables, connectors, and harness assemblies and easily removable transponder antenna with coaxial cable connections. All interconnections are of aircraft quality electrical shielded wiring, cables, connectors, and harnesses. The workstation includes a test panel console for bench testing of transponder electronics.

Using Model AT-22, Avionics Instructors can effectively teach students on installing, removing, and testing a transponder unit. Students also develop proper understanding and learn how to troubleshoot the Airborne Transponder System.

**Features**
- Durable, steel frame, Vertical standing panel with sturdy casters
- Wood shelf
- Accessories storage case
- Adjustable height equipment & test panels
- Avionics panel complete with Honeywell KT76A with built-in Indicator
- Power Supply with voltage and current meters, power cord
- Installation and mounting kit
- Aircraft Antenna mounted on rotating mechanism

**Test Panel Specifications**
3 1/2 digit Meter Monitors voltage or current to unit under test selected by meter switch
AC & DC Power Fuses - To check unit under test power requirements for fuse size. Panels supplied with 5 amp fuse.
STBY-OFF switch - STBY position applies power to panel and transponder in standby.
ON-STBY switch - ON position powers up transponder.
14VDC/28VDC switch - Selects operation voltage of unit under test.
REPLY SENSE pot - Adjust brightness of reply lamp, see note sheet for unit under test.
REPLY LAMP - Uses lamp type number 338.
LO SENSE/OFF switch - Selects units' lo-sense operation when available.
A TEST/OFF switch - Selects A mode self test when available.
GROUND/AIR switch - Disables reply when in ground position.
C TEST/OFF switch - Select C mode self test when available.
IDENT/OFF switch - Selects IDENT mode.
Four MODE/OFF switches - Modes A,B, C, and D
Encoding Thumbwheel to set the A mode code.
Encoding Toggle switches to set each A mode & C mode code bit.
Test Points to monitor various signals
Model AT-23 Aircraft Distance Measuring Equipment (DME) System Trainer is designed to provide hands-on training on a real and operational equipment approved for aircraft installation. The equipment is mounted on a mobile workstation containing aircraft DME unit with built-in indicator, and DME antenna, and a test set. The trainer includes aircraft quality electrical shielded wiring, cables, connectors, and harness assemblies and DME antenna with coaxial cable connections. The trainer includes a test panel console for bench testing of DME equipment.

Using Model AT-23, Avionics Instructors can effectively teach students on installing, removing, and testing a DME unit. Students also develop proper understanding and the necessary skills to troubleshoot the DME.

**Features**
- Durable, steel frame, Vertical standing panel with sturdy casters
- Accessories storage drawers & cabinet
- Avionics panel complete with Honeywell DME with built-in Indicator for distance, speed, and time
- Built-in DC Power Supply
- Simulation of Distance, and Speed

**Frequency Control**
A 200 channel parallel frequency control head is built into the panel providing 2 of 5 and slip codes. This simulates a remote control head for DME.

**Connectivity**
Our Models AT-20, AT-21, AT-22, and AT-23 can be interconnected for enhanced training features covering the integration of various avionics equipment in aircraft cockpit.

**DME Trainer Specifications**
Deliverables include the following items:
- Panel-mounted DME KN 64
- Cables
- DME antenna
- Power supply 28V, 10A Test Set for Transponder and DME
- Test harness assembly
- Test Set coax cables
- Test Antenna
- DME Fault Simulation Panel
- DME Bench Test panel with current meter, volt meter, and fused input power
- Computer-based Training (CBT)
- CBT Admin Module with Database Connectivity

**Computer Based Training**
Model AT-23 is supplied with CBT covering the relevant topics, at no additional cost.
Model AT-24 Instrument Landing System (ILS) Trainer is designed to provide hands-on training on real and operational equipment approved for aircraft installation. The equipment is mounted on a mobile workstation containing aircraft ILS receiver units (Marker, Localizer, and Glide-Slope), NAV/VOR/GS indicator, marker indicator, marker antenna, NAV and Glide-Slope antenna. Aircraft quality electrical shielded wiring, cables, connectors, and harness assemblies are used to interconnect all units. All units are easily removable. The workstation includes two test panel consoles for bench testing of ILS receiver equipment.

The trainer is supplied with a hand-held ramp tester that simulates several signals representing Localizer, Glideslope, and VOR deviations. Also, the tester simulates outer, middle, and inner markers.

Using Model AT-24, Avionics Instructors can effectively teach students on installing, removing, and testing ILS units. Students also develop proper understanding of the system and learn how to troubleshoot the ILS faults.

**Features**
- Durable, steel frame, with sturdy casters
- Accessories storage drawers and cabinet
- Avionics test panels
- Honeywell (Bendix-King) ILS Receivers
- NAV/LOC/GS Indicator
- Power Supply with voltage and current meters

**Documentation**
- Technical Reference Manuals
- Students’ Manual
- Wiring diagram

**Computer Based Training (CBT)**
Model AT-24 is supplied with CBT covering the relevant topics, at no additional cost.

**Connectivity**
Our Models AT-20, AT-21, AT-22, AT-23 and AT-24 can be interconnected for enhanced training features to teach how various avionics equipment in aircraft cockpit are integrated for IFR flying.

**VOR/LOC/GS Receiver Specifications**
200-channel navigation receiver, with built-in 40 channel Glideslope receiver. Simultaneous display of both active and standby frequencies, which can be flip-flopped by a frequency transfer button. Fully solid-state system employs digital frequency synthesizer.
Model AT-25 Weather Radar Trainer utilizes an actual general aviation weather radar to provide practical training to the students. The Weather Radar Trainer is designed to provide hands-on training on a real and operational equipment approved for aircraft installation. The radar indicator, associated power supplies, and test panel is mounted on a mobile workstation. The transmitter/receiver unit fitted with antenna is provided with the necessary attachments to position the antenna at an appropriate location during system operation.

**Features**

- Digital weather radar system
- Color radar system with vertical profile display of weather information
- Consisting of indicator, and receiver/transmitter
- Solid-state Four color display
- Enables user to overlay navigation and weather information simultaneously when used with a graphics unit and compatible moving map GPS or Flight Management System
- Microprocessor based antenna stabilization
- Extended Sensitivity Time Control logic automatically correlates target distance with intensity
- High-reliability design with magnetron life of 8000 hours

**Documentation:**

Technical Reference Manuals
Students’ Manual
Wiring diagram

**Computer Based Training (CBT)**

Model AT-25 is supplied with CBT covering the relevant topics, at no additional cost.

**Connectivity:**

The weather radar trainer can be interfaced with our Model IT-02 EFIS Trainer to further expand its training value and to enhance the capabilities.
Aircraft Navigation Trainer Model AT-30

Model AT-30 Aircraft Navigation Systems Trainer is designed to provide hands-on training on a real and operational equipment approved for aircraft installation. The equipment is mounted on a mobile workstation containing aircraft navigation radio, indicator, and the NAV antenna assemblies. All interconnections are of aircraft quality electrical shielded wiring, cables, connectors, and harnesses. The workstation includes a test panel console for bench testing of NAV electronics.

Using Model AT-30, Avionics Instructors can effectively teach students on installing, removing, and testing as done on flight lines. Students develop proper understanding and learn to troubleshoot the NAV Systems.

**Installed Systems**  
VOR, Localizer, Glide Slope, Marker Beacon,  
ADF, H.S.I system (directional gyro and magnetic flux detector)

**Documentation**  
Technical Reference Manuals  
Students’ Manual  
Wiring diagram

**Test Panels**  
The Model AT-30 navigation trainer is fitted with test panel to monitor the Unit Under Test (UUT) input/output signals for calibration and troubleshooting. The test panels relate to ADF system and VHF Navigation system.

**Metering**  
Metering is provided by a panel mounted digital meter. The meter switch selects the following inputs:  
DC Volts  
Tx/Rx Amps  
IND Amps  
RMS (speaker channel)  
NAV FLAG (0 to 5 - 1K meter loads)  
NAV DEVIATION (0 to 5 - 1K meter loads)  
GLIDE SLOPE FLAG (0 to 5 - 1K meter loads)  
GLIDE SLOPE DEVIATION (0 to 5 - 1K meter loads)  
TO-FROM FLAG (200 ohm meter load)

**Test Points & Switches**  
The panel has Breakout Jacks for access to a variety of signals and functions.  
NAVIGATION section provides the following common test point and switches.  
Metering of Deviation and Flag outputs  
Loading for the Deviation and Flag outputs  
Test Point Jacks for Deviation and Flag outputs  
ILS energize switch  
BNC connection for Composite out  
Test Point Jacks for OBS signals (provision for connection of precision track selector)

**Computer Based Training**  
Model AT-30 is supplied with CBT covering the relevant topics, at no additional cost.
Model AT-33 Glass Cockpit Trainer comprises of real avionics equipment that uses a proven, capable, fully integrated glass cockpit solution. The system comes with everything that is needed to implement a fully integrated avionics suite and dual electronic flight displays. The system serves as a selection hub for available navigation inputs, as well as providing course deviation and vertical descent indicators, plus heading bug and GPS roll steering information. The system can be interfaced with several autopilots.

Leveraging technology from Garmin’s highly successful avionics systems, the Model AT-33 puts a wealth of graphical flight information at the pilot’s fingertips. Design highlights include display of attitude, heading, air data, engine and fuel status; plus situational reference via a detailed moving map display, with position derived by a Class 3 WAAS-certified GPS system. In addition, complete 16 watt VHF comm, VOR/ILS and digital transponder inputs are provided with frequency and code selection controlled by tuning knobs and function keys on the dual LCD cockpit displays.

The Model AT-33 is an integrated glass cockpit package, which is clearly more than a glass replacement for the old-style gyromechnical instruments. By consolidating all primary flight, navigation, radio tuning and engine data with the latest in weather, terrain and traffic alerting inputs, the system provides flight progress monitoring and situational awareness.

This all-digital unit features high-quality sound, plus a unique record/playback function to help ensure accurate readback of ATC clearances. Seamlessly integrating control and display of virtually all avionics and instrument functions, the bright 1024 x 768 pixel flat-panel displays offer brilliant color, wide side-to-side viewing angles, advanced backlighting and crisp readability. As typically configured, two of these 10.4-inch diagonal displays are placed side-by-side on the panel to put all essential flight situation, navigation and sensor data right in front of the pilot. The left hand glass panel contains a Primary Flight Display (or PFD) for attitude, airspeed, climb rate, altitude and course/heading information, while the right hand screen serves as a Multi-Function Display (MFD), providing engine and fuel systems monitoring plus detailed moving-map graphics of the aircraft’s current position in relation to ground features, chart data, NAVAIDS, flight plan routing, and more. On-screen navigation and mapping depictions are supported by a detailed Jeppesen® flight database, which may be easily updated by means of standard front-loading SD data cards.

The map display is designed to interface with a growing array of remote sensors and tracking systems, so pilots can overlay graphical weather, lightning, traffic, terrain and other avoidance system advisories. Sensor functions are selectable, allowing the pilot to add or deselect overlays to “build at will” the map view he or she prefers for any given phase of flight. For MFD navigation, Garmin FliteCharts™ electronic terminal
procedures charts and approach plates come pre-loaded on the system. Airways, approaches, departure and arrival routes - FliteCharts™ put the full IFR spectrum at your fingertips. Likewise, on the ground, built-in SafeTaxi™ airport diagrams for over 680 U.S. locations help pilots navigate unfamiliar airfields with confidence - by graphically pinpointing the aircraft’s current location and direction of travel on ramps, taxiways and runways.

For system redundancy, the PFD and MFD screens are designed to enter a reversionary mode should failure or shutdown of either display occur. Fault monitoring and reversion are automatic; however, the pilot can also manually select reversion mode by pressing a dedicated red button on the audio panel. In reversionary mode the remaining operable control/display unit is reconfigured to show the PFD symbology with engine and fuel parameters on the left-hand side of the display. Pop-up windows allow additional mapping, flight plan data or other desired inputs to remain visible on the PFD.

Main Features

- Dual high resolution 10.4 inch 1024x768 displays
- Dual integrated avionics units including:
  - Precision approach (Class 3) WAAS-certified GPS
  - ILS/VOR navigation receiver
  - 16-watt VHF communication transceiver with 25 kHz or 8.33 kHz channel spacing
  - Mode-S transponder with Traffic Information Service (TIS)
- Solid-state Attitude and Heading Reference Systems (AHRS) with remote Magnetometer
- Digital air-data computer
- Digital audio panel with auto-squelch and “instant replay” clearance recorder
- Complete engine-monitoring display with crew-alerting advisories (CAS) system
- Built-in Worldwide terrain and U.S. obstacle database with terrain proximity display
- Modular rack-mounted LRUs
- Built-in Safetaxi™ functionality with over 680 airport diagrams
- Pre-loaded Garmin FliteChart electronic charting
- Display of victor/jet airways
- User-programmable checklist functionality
- Fully automated reversionary display capability
- Engine Information System display includes:
  - Manifold pressure
  - RPM
  - Fuel quantity (left and right), flow, pressure, mpg, and totalizer
  - Oil temperature, and pressure
  - Engine Temperature; CHT and EGT
  - Trim - elevator, aileron, rudder, flap position
  - Electrical - main bus volts, essential bus volts, battery ammeter, alternator ammeter
  - Engine hours
Aircraft Communication Trainer Model AT-31

Model AT-31 Aircraft Communication Systems Trainer is designed to provide hands-on training on a real and operational equipment approved for aircraft installation. The equipment is mounted on a mobile workstation containing aircraft VHF and HF communication transceivers and antennas. All interconnections are of aircraft quality electrical shielded wiring, cables, connectors, and harnesses. The workstation includes a test panel console for bench testing of COMM electronics.

Using Model AT-31, Avionics Instructors can effectively teach students on installing, removing, and testing using live radios and antennas. Students develop proper understanding and learn to troubleshoot the COMM System.

Features:
- Durable, steel frame, Vertical standing panel with sturdy casters
- Wood shelf
- Accessories storage case
- Adjustable height equipment panels
- Adjustable height test panel
- Avionics panel, complete with Bendix-King VHF and HF Radios
- Microphone and phone jacks

Installed Systems:
- VHF Transceiver
- VHF Antenna
- HF Transceiver
- HF Antenna Coupler
- HF Antenna
- Audio Panel
- Intercom

Test Panels:
The Model AT-30 navigation trainer is fitted with test panel to monitor the Unit Under Test (UUT) input/output signals for calibration and troubleshooting.

Metering:
Metering is provided by a panel mounted digital meter. The meter switch selects the following inputs:
- DC Volts
- Tx/Rx Amps
- RMS (speaker channel)
- RMS (phone channel)
- RMS (aux audio)

Documentation:
- Technical Reference Manuals
- Students’ Manual
- Wiring diagram

Computer Based Training
Model AT-31 is supplied with CBT covering the relevant topics, at no additional cost.

Test Point & Switches
The Test Panel has Breakout Jacks for access to a variety of signals and functions. The test panel provides the following common test points and switches.
- Metering of the supply voltage and current draw
- Microphone input (with mike test function for testing pilot’s mike)
- Key Switch & Lamp
- Panel speaker (monitors speaker or phone/interphone channels)
- Squelch control and Disable
- Tuning Lamp Indicator
- Serial or Parallel controller selection
- Headphone Output Jack (monitors phone/interphone & aux audio channels)
- Test Point Jacks for - Audio (microphone, audio Comm input), Audio (mike intercom audio input), Audio (Comm audio out), Audio (sidetone / aux audio out), Audio (speaker audio).
Almost all the new generation commercial and military aircraft utilize electronic displays in the cockpit. Electronic Flight Instrument System (EFIS) is the essential component of ‘Glass Cockpit’. ARINC 429 is one of the most widely used avionics data interface standards. It has been installed on many commercial passenger and transport aircraft including Airbus A310/A320 and A330/A340, Bell Helicopters, Boeing 727, 737, 747, 757, 767 and McDonnell Douglas MD-11.

Training imparted on an ARINC 429-based EFIS will prepare the students to easily understand other EFIS based on other versions of commercial and military avionics data busses. AeroTrain’s EFIS Trainer model IT-02 has been designed to enable avionics students to understand a typical digital bus EFIS system, and to perform maintenance and troubleshooting tasks that are typically encountered by avionics maintenance personnel.

The EFIS Trainer is based on Honeywell EFS 40 and consists of: Two Display Units, a Symbol Generator, a Control Unit, a Signal Simulator, and an Instructor’s Panel.

Electronic displays are multi mode with ADI, HIS and Map modes. Map mode allows for superposition of Weather Radar data and sector display.

The fault panel allows for the simulation of typical aircraft EFIS installation faults including sensor feed faults (from simulator panel). The faults are easy to select but not apparent to the student. A numbered switch panel or patching panel with cover is provided.

The system is powered by 28VDC. Maintenance manuals are supplied for all the equipment. Interconnect diagrams and panel circuit and layout diagrams are also provided. Wiring harnesses in the trainer are representative of aircraft standards in hardware and wiring / looming techniques.

The manuals supplied with the trainer facilitate the students in performing Interconnect Checkout, Functional Checks, and Troubleshooting. All interconnection are by ARINC429. All aircraft system components are approved to FAA TSO standards or approved by STC for installation in at least one aircraft type. The signal simulator supplied with test panels, patching panels, harnesses, computer controlled simulator and means of navigation data entry so as to allow demonstration of typical dynamic displays and full testing of system. A commercially available test set or, alternatively, a custom-built 19 inch panel is supplied.
Aircraft Instruments Trainer Model IT-01 is manufactured by AeroTrain Corp. for a full functional demonstration of the actual instruments used in aircraft. It includes standard flight instruments, engine instruments, and Pitot-Static instruments. All instruments and systems are fully functional. The trainer is not only a tool for the instructor to demonstrate working principles, it also provides hands-on training to students.

As an option, flight line or workshop test equipment for the instruments may be supplied for hands-on maintenance training. The Model IT-01 Aircraft Cockpit Instrumentation Trainer is a functional simulation of an aircraft cockpit. It includes essential flight and engine instruments. All indicating systems are fully functional. The system provides demonstration of the proper functioning of gyros, altimeter, and the standard engine instruments. It can also be used for teaching instrument removal and replacement. All of the systems are completely plumbed and functional. Included is a provision for conducting pitot-static system checks through a pitot test port and a static test port.

Our newly designed version has an elegant mechanism for instrument panel tilt, turn, and swivel to fully demonstrate gyro function. An aircraft control yoke is installed to move the instruments panel, thereby simulating changes in aircraft attitude.

AeroTrain is always willing to accommodate customers’ request for a customized training solution if our standard products do not completely address the customers’ needs.

The trainer is mounted on a moveable stand. The trainer comes complete with a User and Training manual. Model IT-01 requires only 110 V (60 Hz) or 220 V (50 Hz) AC power for its operation. Overall dimensions are approximately 37 L x 19 D x 75 H inches

**Computer-Based Training (CBT)**

The training value of the instruments trainer can be substantially enhanced by ordering the optional CBT covering the relevant topics.
Cockpit Instrumentation Trainer Model IT-01

Features

Flight Instruments
- Directional Gyro (Vacuum or Electric options)
- Attitude Gyro & Indicator (Artificial Horizon - Vacuum or Electric options)
- Airspeed Indicator
- Turn and slip indicator (Vacuum or Electric options)
- Altimeter
- Rate of Climb Indicator (Vertical Speed Indicator)
- Suction gauge for gyro (if vacuum gyros are used)

Pitot-Static System
- Pitot tube
- Fuselage side static port
- Alternate static port
- Static source selector
- Two Test Ports for Pitot-Static Test Set
- Pitot Test Selector Switch
- Static Test Selector Switch

Electronic Simulation of Sensors
- Oil Temperature
- Manifold Pressure
- Engine RPM
- Oil Pressure (if installed)

Miscellaneous
- Vacuum filter and vacuum pump
- Vacuum pressure regulator
- T&B Vacuum Regulator (if vacuum gyro installed)

Engine Instruments
- Engine RPM Indicator
- Manifold Pressure Gauge
- Oil Temperature Indicator
- Oil Pressure (if electric gyros are used)
- Suction Gauge (if vacuum gyros are used)

Controls
- Yoke for roll/pitch/yaw movement control
- Throttle Control Lever
- RPM Control Lever
- Altitude Simulation Control Valve
- Climb/Descent Selector
- Climb/Descent Simulation Control Valve
- Vacuum Gauge (if vacuum gyro installed)

Ordering Information
Model IT-01: Standard model with conventional instruments, and electric gyros
Model IT-01V: Standard model with conventional instruments, and vacuum gyros
The Model IT-01-E is a Cockpit Instrumentation System with Electronic Flight Instruments (Primary Flight Display or PFD) and electronic engine display (Engine Monitoring System or EMS). Three degrees of freedom instrument panel permits full demonstration of attitude and directional gyro functions.

Standard Features
• Functional digital primary flight display mounted on a panel that can simulate roll, pitch, and yaw movements controlled by a mechanism operated by a control yoke.
• Functional engine monitoring system connected to engine sensors
• Provision of engine sensor simulation
• Standby Instruments installed
• Functional pitot-static system with provision for conducting pitot-static system checks

The Model IT-01-E is fitted with the following sensors:
• CHT Thermocouples (Qty. 4)
• EGT Thermocouples (Qty. 4)
• Oil Temperature Sensor
• Manifold Pressure Sensor
• Fuel Level Sensor
• Ammeter Shunt
• OAT Sensor
• Pitot-static Tube
• Fuel Flow Sensor
• Oil Pressure Sensor
• Fuel Pressure Sensor
• Engine RPM Sensor
• OAT Sensor
• Pitot-static Tube
• Fuel Flow Sensor
• Oil Pressure Sensor
• Fuel Pressure Sensor
• Engine RPM Sensor

As an optional upgrade, the trainer may also be fitted with a navigation system simulator which will provide necessary signals to simulate ILS, VOR, and GPS inputs for EFIS display. Please contact AeroTrain to get the pricing for this option.

The Model IT-01-E also contains standby instruments. The minimum list of standby gauges installed is:
Additional instruments may be installed on the panel if the customer wishes to teach both conventional and electronic instruments using the same trainer. The optional conventional instruments (in addition to standby instruments listed above) include:

**Power Supply:** 110 V (60 Hz) AC or 220-230V (50 Hz) AC
• Turn & Bank Indicator
• Engine RPM Indicator
• Manifold Pressure Indicator
• Oil Temperature Indicator
• Oil Pressure Indicator

**Dimensions:** 37 L x 22 D x 75 H inches

**Ordering Information:**
Model IT-01-E: EFIS and EMS added to the Standard model (IT-01,
Model IT-01-E1: Model IT-01-E with additional conventional see page 34 instruments
The system is powered by 28VDC. Maintenance manuals are supplied for all the equipment. Interconnect diagrams and panel circuit and layout diagrams are also provided. Wiring harnesses in the trainer are representative of aircraft standards in hardware and wiring / looming techniques.

The manuals supplied with the trainer facilitate the students in performing Interconnect Checkout, Functional Checks, and Troubleshooting. All interconnection are by ARINC429. All aircraft system components are approved to FAA TSO standards or approved by STC for installation in at least one aircraft type. The signal simulator supplied with test panels, patching panels, harnesses, computer controlled simulator and means of navigation data entry so as to allow demonstration of typical dynamic displays and full testing of system. A commercially available test set or, alternatively, a custom-built 19 inch panel is supplied.

The cockpit panel includes the following:

- Wet Compass
- Annunciator Panel
- VOR 1
- VOR 2
- ADF
- Altimeter (Inches or Metric Pressure Scale)
- Vertical Speed Indicator
- Warning Panel
- Tachometer
- Altitude Indicator
- Heading Indicator w. Autopilot heading bug
- Airspeed Indicator
- Turn and Bank Indicator
- Digital Clock
- Fuel Indicator (Left & Right)
- EGT / Fuel Flow Indicator
- Oil Temp. / Pressure Indic.
- Suction Gauge/Ammeter
- Cessna style Yoke
- Circuit Breaker Panel
- Keyswitch (5 position incl. starter)
- Master Switch (Alt. & Battery)
- Circuit Breakers
- Switches Panel
- Avionics Master Switches
- Circuit Breakers
- Light Regulation
- Static Air Switches
- Turn Indicator
- Turn Wheel
- Throttle (with Friction Lock)
- Mixture (with Learning)
- Expansion for Prop. Adjust
- Flap Indicator
- Flap Switch
- Expansion for 2nd Yoke
- Tank Switch
- Fuel Shut Off Switch
- Audio Panel
- NAV/COM 1
- NAV/COM 2
- Digital DME
- Transponder
- ADF
- Autopilot

- Panel Size: 46.5 L x 28.5 D x 27 H inches
- Weight: 55 lbs.
- Voltage: 110/230V AC, 50/60Hz. @ 300W
- PC Connections: USB
- PC with all required software and hardware is included.
The Model IT-03 EFIS/EICAS Trainer is based on panel-mount LCD flight and navigation displays. The trainer has a full functional primary flight display (PFD) for attitude/directional guidance with electronic engine monitoring and detailed moving-map multifunction display (MFD) capabilities. There are separate PFD and MFD screens, with full reversionary backup for redundancy.

The Model IT-03 is an advanced technology avionics suite designed to integrate pilot/aircraft interaction into one central system. The system combines primary flight instrumentation, aircraft systems instrumentation, engine instrumentation, warnings/alerts, and navigational information, all displayed on two LCD color screens. The Model IT-03 is a complete package that represents EFIS / EMS / EICAS displaying flight instrumentation, position, navigation, communication, and identification information to the pilot using dual 7” wide (800x480) flat-panel color displays.

Using sophisticated graphics modeling, the integrated synthetic vision technology provides the perspective of what lies ahead. The system pulls together information from the built-in aviation basemap and terrain elevation database, letting you clearly visualize terrain features, obstacles, waterways and airport locations on the 7-inch high-definition display. By adding an optional Mode S transponder, the system can display Traffic Information Service (TIS) alerts. The system can also be coupled with autopilot system to provide sophisticated flight control modes including altitude preselect and capture, heading hold and GPS as well as ILS navigation.

The Model IT-03 uses the latest in GPS-aided digital ADAHRS (Air Data and Attitude Heading and Reference Systems). Leveraging solid-state sensors and sophisticated attitude determination and integrity monitoring algorithms used in high-end systems, the ADAHRS provides highly accurate and reliable referencing of aircraft position, rate, vector and acceleration data. The trainer is equipped with a comprehensive sensor package for ADAHRS, engine monitoring, plus magnetometer and temperature probe.

All harnesses are manufactured as per the approved and acceptable standards for aircraft wiring.

**Sensor Unit**

The Sensor Unit contains Air Data Computer (ADC), Engine/Airframe Unit, and the Attitude and Heading Reference System (AHRS).

The ADC processes data from the pitot-static system and outside air temperature (OAT) sensor.

Engine/Airframe Unit receives and processes signals from the engine and airframe sensors.
AHRS provides aircraft attitude and heading information to the Primary Flight Display (PFD). The AHRS contains advanced sensors (including accelerometers and rate sensors) and interfaces with the Magnetometer to obtain magnetic field information, with the ADC to obtain air data, and with the display unit to obtain GPS information.

Magnetometer
Magnetometer measures the local magnetic field and sends data to the AHRS for processing to determine aircraft magnetic heading. This unit receives power directly from the AHRS and communicates with it via an RS-485 digital interface.

Outside Air Temperature (OAT) Probe
The Temperature Probe provides raw air temperature data.

Autopilot Interface
The Model IT-03 can also communicate with various third-party external autopilot units. With the Integrated Autopilot configured, the system issues pitch and roll steering commands to the external autopilot unit.

Power
110V AC or 220V AC at 60/50 Hz, single phase.

Air Data Sensors
• Airspeed
• Altitude
• OAT

Engine Sensors
• 4 x CHT
• 4 x EGT
• Oil Temperature
• Oil Pressure
• Fuel Flow
• Fuel Quantity
• Manifold Pressure
• Ammeter Shunt
• Engine RPM

Airframe Sensor Inputs
• Pitch Trim
• Roll Trim
• Rudder Trim
• Flap Position
• Speed Brake
• Aircraft Main Door
• Aircraft Alternate Door
• Baggage Door

Avionics Interfaces
• GPS
• Transponder
• Autopilot
• NAV/Comm

Documents
• User Manual
• Students Study Guide

Computer Based Training (CBT)
A CBT package, covering relevant topics, is provided free of charge with the trainer.
The Model IT-04 Basic EFIS Trainer provides an introduction to a general aviation Electronic Flight Instruments System (EFIS). The EFIS used in Model IT-04 is a versatile unit that includes several features representing a modern EFIS display.

**EFIS Features:**
- External GPS Receiver with Jeppesen database
- External Remote Compass System
- H.S.I Resolver Interface
- ARINC 429 Interface (at least one transmit channel and two receive channels)

**Built-in Data Logging Capability**
At least 2 hours of cumulative data can be recorded at one second recording interval, and with a 10-second interval, at least 20 hours data recording

**AHRS Components**
- Three solid-state gyrometers
- Three solid-state accelerometers
- Three solid-state magnetometers

**Air Data System Components**
- Airspeed transducer
- Altitude transducer
- Angle of Attack transducer

Aircraft Heading information is obtained from 3 solid-state magnetometers. Additionally, a remote compass system input is provided.

**EFIS Display** includes the following:
- Horizon line, pitch and roll indicators
- CDI/Glideslope Indicators
- Stabilized heading tape and digital readout
- Turn rate indicator
- Digital Altitude
- VSI
- Elevator trim indicator
- Winds aloft arrow
- Angle of attack (AOA) indicator
- Airspeed digital readout, and trend
- Bugs to mark a desired heading, airspeed, or altitude.
- Slip/skid ball
- Altimeter setting display
- Clock/timer
- Autopilot Status Indicator
- OAT
- G-Meter
- Voltmeter
- Timer
EFIS includes H.S.I Display which shows course indication, course deviation, vertical guidance, ground track, ground speed, altitude, distance to waypoint, To/From indicator, Glideslope Indicator, and Glideslope flag.

H.S.I NAV Overlay includes text displays. The text displays (located at the top of the HSI Page) provide a variety of information comprising the course/OBS setting, the active frequency, the identifier for the tuned frequency, and the bearing to the active and secondary frequencies.

The GPS Overlay includes text displays to display a variety of information in text format. Displayed text to include the ground track (TRK), the course (CRS), ground speed (SPD), distance to next waypoint (DTW), and up to two bearing pointer selections.

EFIS Display Characteristics
• Display Type: LCD, TFT (Thin Film Transistor)
• Backlight: at least 800 nits
• Size: 7.0” diagonal (178 mm)
• Resolution: 854 x 480 color pixels

EFIS Display Unit Inputs/Outputs Ports
• One RS-232 bidirectional PC communication (for EFIS set up via a PC or laptop)
• One RS-232 data inputs (for GPS)
• One RS-232 serial encoder output (for altitude encoding)
• One Multi-drop Avionics Bus (for additional displays)
• One Analog Audio Alarm (for angle of attack alarm)

Power: 110V AC or 220V AC at 60/50 Hz, single phase

CBT Topics:

*Part One - Electronic Display Systems*
Displays
CRT
LED
LCD
Primary Flight Instruments
Navigation Displays
Electronic Attitude Director Indicator (EADI)
Electronic Horizontal Situation Indicator (EHSI)
Symbol generator
Control panels
Multifunction Displays (MFD)
Engine indicating and crew alerting systems
Electronic centralized aircraft monitors

*Part Two - Air Data Computation*
Sensors and inputs
Signal processor elements: mechanical, electrical and electronic
Signal outputs
Displays / Indicators

*Part Three - Digital Information Transfer (ARINC 429)*
Specifications
Characteristics
Word Format
The Model IT-04A GPS Navigation Trainer with Moving Map is a valuable hands-on training system that allows the students to explore the functionalities offered by modern GPS navigation systems. The bright 7-inch diagonal high-definition sunlight-readable display makes detailed mapping easy to see; you can even view an entire approach plate on the large-format display. For easy operation, the bezel around the screen includes soft keys and a joystick control. And with a fast 5 Hz GPS update rate, the rendering of graphics and flight data is smooth and continuous.

The display has Class 1/Class 2 electronic flight bag (EFB) capability. When in IFR map mode, the victor airways, jet routes, minimum enroute altitude and leg distance, can be displayed.

The system offers Enhance Situational Awareness through several using on a high-resolution terrain page showing hazards relative to the altitude and a vertical profile of terrain along the route of flight. It comes with a built-in Jeppesen database, and an Americas, Atlantic or Pacific terrain database. Using this information, the system displays flight route over contour terrain mapping. With information from the terrain database, it monitors the current position in relation to surrounding terrain to provide alerts. The user can even customize the minimum clearance levels to receive terrain cautions. The display also comes with a realistic “view from space” satellite imagery basemap.

**Features:**
- Moving map
- Instruments page
- Built-in HSI: yes
- Traffic Information Services (TIS) alerts compatible
- Audible terrain alerts
- Smart Airspace Feature (generates and displays altitude-sensitive alerts)
- Separate serial and USB interfaces
- Automatic logbook
- IFR map mode

**Computer Based Training:**
The model AT-04A is supplied with a CBT package. The CBT package allows up to 30 perpetual licenses without any license renewal fees.

**Documentation:**
- Students’ Lab-sheet
- Instructor’s Manual
- Training Manual
- Wiring Diagram

**Specifications:**
- Display size: 3.6 W x 6.0 H: 7.0 diag
- Display resolution: 480 x 800 pixels
- Display type: bright, color WVGA TFT with adjustable backlighting
- Battery: rechargeable, replaceable Nickel-Metal Hydride
- Battery life: up to 3 hours with full backlight
- Voltage range: 11-40
- High-sensitivity receiver
- Basemap included
- Jeppesen® database
- Jeppesen database coverage areas: Americas or Atlantic or Pacific
- Ability to add maps
- Accepts data cards (SD cards)
- Built-in memory: internal solid state
- Waypoints/favorites/locations: 3,000
- Routes: 50
- Simulation: GPS Simulator included
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