



Our trainer enables trainees to get hands-on experience on avionics systems. The trainer ensures practical training with original avionics equipment configured to bring real-life experience to the training environment. Our design provides trainees with a good understanding of avionics equipment and a methodical approach for troubleshooting. We understand and tailor according to our customers' training needs.

The trainer is delivered plug and play and comes with necessary antennas, transmitters, receivers, wiring, and indicators.

**Note:** The trainer can be customized with indicators and avionics devices according to your training needs. Please contact us for your special requests.

## Optional

### NAV/COM Ramp Tester

Please contact us for Test Equipment

## Specifications

### Features

- The system combine “Navigation(ADF-DME-VOR-ILS-GPS-XPDR) instrumentation”, “Communication(VHF) instrumentation”, and “navigational information”.
- NAV system testing
- Comm System Testing
- Indication Testing
- Encoder Altimeter Testing
- Altitude simulation
- Altimeter and Transponder run in sync
- TXPDR Ident
- DME Channel selection
- 6(six) metal drawers.
- All required cabling, coupler ,splitter and socket
- Instructor’s Panel for fault insertion.
- Extension cable for GPS Antenna
- Tripod stand for mounting GPS Antenna
- The system mounted on a metal/aluminum mobile stand.
- Metal/aluminum frame with 4 wheels. 2 of 4 wheels are lockable
- Training video for teachers
- Delivered fully assembled tested and ready to operate

## Components

- Two Nav/Com Radio ( Vor/ ILS )
- Two Nav Indicators ( Analog or Digital )
- GPS (Global Positioning System )
- ADF (Automatic Direction Finder )
- ADF Indicator
- ILS (Instrument Landing System )
- DME (Distance Measuring Equipment)
- Transponder
- Marker Beacon
- Altitude Encoder
- Intercom System
- Two Pilot Headsets
- Dynamic Microphone
- Altimeter
- Vacuum Pump
- Dc Power Box
- Circuit Breake
- Antennas
  - VOR/LOC antenna
  - ADF antenna
  - Marker-Beacon antenna
  - GS antenna
  - VHF-COM antenna
  - TRANSPONDER antenna
- All antennas cables

## Components Technical Specs

### NAV/COMM Device General Specs

- NAV/COMM Transceiver
- 200-channel NAV receiver
- Built-in VOR Converter
- Maksimum 25 kHz channel spacing
- Frequency(COM) 118.000 to 136.975
- Nav frequency 108.00 MHz to 117.95 MHz in 50 kHz spacing
- VOR/LOC converter
- Input voltage 28 VDC
- Built-in VOR/Localizer converter

- flip-flop frequencies
- Volume control
- Frequency memory and recall
- Display
- Frequency stability:  $\pm 0.0015\%$
- Original installation manual.

### **NAV INDICATOR Device General Specs**

- Navigation Indicator containing VOR/LOC left-right needle
- To-From Indicator
- VOR/LOC Warning Flag
- OBS
- Integral VOR/LOC Converter
- At least one of them Glideslope Deviation needle
- Internally lighted
- Metal bezel with glass lens
- Used with nav-receiver
- Typical VOR Accuracy; (VOR) Bearing error less than 1.7 degrees. Full scale deflection for 10 deg. course error.
- CONVERTER INPUTS: .5VRMS  $\pm 10\%$  ARINC phasing (VOR Composite Input); 100k ohms (Input Impedance)
- COURSE DATUM SYNCHRO OUTPUT: 393mV/degree, 1 deg. Accuracy Typical
- TYPICAL ACCURACY (LOC): (LOC) Centering error less than 3uA. Three fifths deflection for 4dB tone ratio
- CONVERTER OUTPUT DRIVE CAPABILITY: Five 1K loads 150 uA full scale (VOR/LOC Deviation); Two 200 ohm, 200-0-200uA loads (TO/FROM); Five 1K ohm, 0-260uA loads (VOR/LOC Warning Flag)
- Original installation manual.

### **Transponder Device General Specs**

- Transmitter Frequency; 1090 MHz  $\pm 3$  MHz
- Receiver Sensitivity: -73dBm (nominal); -69dBm (min. for 90% reply)
- Mode C Capability: Accepts standard ICAO Altitude Transmission Code digitizer output, reporting in 100 ft. increments from -1000 ft. throughout operating range
- Input voltage 28 VDC
- 4096 discrete codes
- Backlight labels and knobs
- CLR button
- VFR button
- IDT button

- Numeric Buttons(0-1-2-3-4-5-6-7)
- KNOP(OFF-SBY-TST-ON-ALT)
- Code window
- Original installation manual.

#### **DME Device General Specs**

- 200-channel receiver
- CHANNELING SOURCES: External control head providing BCD code, 2x5 code, slip code, or serial code
- RMT/FREQ/GS-T mode
- DME two concentric freq knob
- Freq Display
- Original installation manual.

#### **ADF Device General Specs**

- FREQUENCY RANGE: 200KHz to 1799KHz in 1 KHz increments
- BEARING ACCURACY: +/- 3 degrees from 70 uV/m to 0.5 V/m RF input signal level
- Receiver sensitivity : 150uV/m max for s+n/n = 6dB
- Receiver Selectivity: 6dB bandwidth: +/-2 KHz max off center frequency; 80dB bandwidth: +/-7 KHz max off center frequency
- POWER REQUIREMENTS: 11 to 33 VDC – 12watt
- ADF button
- BFO button
- FRQ button
- FLT/ET button
- SET/RST button
- VOL/Off knob
- Freq display
- Original installation manual.

#### **ADF Indicator General Specs**

- Single needle ADF indicator for use with ADF receiver
- ADF BEARING INPUT: DC sine and cosine voltages, +/-3.0VDC max across each winding
- POWER REQUIREMENTS: Compass Card Drive: 12VDC at 0.12A
- Lighting: 14VDC at 0.16A or 28VDC at 0.08A

#### **GPS Device General Specs**

- Power 10-33 Volt DC

- Should operate up to 50,000 feet
- Color IFR GPS with moving map
- Comprehensive aeronautical database including airports, VORs, NDBs, intersections, and special-use airspace
- Automatic “vector to final” approach capability
- Dedicated “Range” and “Map” menu buttons facilitate map access and tailoring
- Dedicated “Procedures” button simplifies loading of approaches and arrival / departure procedures
- Provides map presentation of other non-GPS approaches (including ILS approaches) for greater situational awareness

### Aviation Map General Specs

- 7” screen
- At least 9 watt
- Should operate 24 volt
- Should have a tripod for gps

### Audio Panel General Specs

- Audio Inputs;
  - Impedance: 600 ohm
  - Max. input: 5 Vrms
  - Isolation: 60 dB minimum
  - Bandwidth: 100 Hz to 6.5 kHz
  - Transceiver: 3 (including TEL)
  - Receiver: 5 (NAV1, NAV2, AUX1, AUX2, AUX3)
  - Alerts: 4 (unswitched)
  - Telephone input: 1
- Intercom Functions;
  - Positions: 6 (pilot, copilot, 4 passengers)
  - Volume control: 2 (pilot, copilot/passengers)
  - VOX: Automatic (1 per MIC input)
  - Modes: Pilot, crew, all
  - MIC impedance: 150 ohm
  - MIC Bias: 11 VDC through 470 ohm
  - Keyed ICS: Configurable
- Music functions;
  - Inputs: 2 (independent from Bluetooth audio)
  - Impedance: 600 ohm (differential)

- Max. input: 3.0 Vrms
- Gain: +24 dB Max/-96dB min
- Input level: < 200 mVrms at max gain for full power out 3dB@1kHz  
Bandwidth 20 Hz to 20 kHz
- Distortion: < 0.1% THD+N typical at full power over full bandwidth
- Muting: Selectable and configurable
- Volume control: Knob controlled (pilot and copilot/passenger)
- Headphone Outputs
  - Output amplifiers: 3 Stereo (pilot, copilot, passenger)
  - Output power: 65 mW into 150 Ohms Pilot and Copilot, 260 mW into 37.5 Ohms passenger
  - Distortion: < 3% THD+N at 10% Power, < 10% THD+N at full power
  - Frequency response: 20 Hz to 20 kHz
  - Impedance rated: 150 Ohm pilot/copilot, 37.5 Ohm Passenger (4-150 Ohm headsets)
  - Impedance supported: 150 to > 600 Ohm
- Speaker;
  - Outputs: 1
  - 28 Volt: 10 Watt into 4 Ohm; 7 Watt into 8 Ohm
  - 14 Volt: 3 Watt into 4 Ohm 3dB@1kHz Bandwidth 350 Hz to 6.5 kHz
  - Distortion: < 10% THD+N at full power, < 3% THD+N at 10% power

### **Headsets Specs**

- 24 dB NRR hearing protection
- 3.5mm Music input port
- EM56 noise reflective cup mic
- Clear Hear performance audio speakers
- Foam Fit comfort ear seals
- Deep Pocket ear canals
- Wind block foam mic muff
- Stainless steel adjustable headband

### **Dynamic Microphone Specs**

- Impedance: 50-600 ohms.
- Includes: 5 ft. coiled cord with right-angle plug and hanger bracket.
- Right angle plug
- Hanger bracket

## Antennas

- VOR/LOC antenna
- ADF antenna
- Marker-Beacon antenna
- GS antenna
- VHF-COM antenna
- TRANSPONDER antenna
- All antennas cables

## NAV/COM Tester

- Output Power;
- ADF = -12 +/-3 dbm
- VOR= -10 +/-3 dbm
- ILS Localizer= -10 +/-3 dbm
- ILS GS = -17 +/-3 dbm
- ILS MKR = -15 +/-3 dbm
- DME = -12 +/-3 dbm
- TXPDR = -12 +/-3 dbm
- VOR radial accuracy; +/- 1 deg
- ILS localizer DDM accuracy; +/- 15%
- ILS glide slope DDM accuracy; +/- 15%
- DME accuracy; +/- 0.1NM
- Transponder specs;
- PRF 235+/-5 Mode A,C 50 +/-2 Mode S
- P2 level equal P1 +/- 0.1 dbm
- P2 position 2 +/-0.01 uS from P1
- P3 position 8 +/- .01uS or 21 +/- 0.02uS Rel to P1
- Pulse width 0.8 +/-0.01uS P1,P2,P3
- Frequency 1030 MHz Tx, 1090 MHz Rx , +/- 2.5ppm
- Reply % 0 to 100% displayed +/- 0.5%
- Reply window 2.5 to 3.5uS F1 from P3
- Pulse Width reads out to +/- 50nS resolution
- X Data Pulse Must=0 for good read
- SPI Displays ID message

**NOTE:** Avionics devices brand/model and some technical specs can be change due to market availability.



## Documentation

- User's Manual
- Study Guide
- Instructor's Guide
- Device's original Manual
- Device's original Wiring Diagrams
- Components Diagrams

## Power Specs

- Electrical box
- Residual current device
- Emergency Button
- Energy Signal Lamp
- 110 VAC 60 Hz or 220-240 VAC 50 Hz