General220: Advanced Integrated Avionics System for General Aircraft

The avionics system designed by the pilot.
General220: Advanced Integrated Avionics System for General Aircraft

General220 Advanced Integrated Avionics System developed by Hermes-sys has integrated major functional modules like PFD, MFD, EICAS, ACP, CNS, FMS, SVS, 3D-TAWS, and AP. It can effectively reduce the number of aircraft instrument panel, improve the security and reliability of flight, and increase the operational capacity of aircraft in an all-round way. Multi-dimensional framework design is adopted to make it highly secure, and military standard is strictly followed in research and production to make it reliable under extreme circumstances. GA220 can be widely applied in the development of new models and the remoulding of active aircrafts such as DO-228, SAAB-340, An-24, An-26.

System Architecture
System Composition

- Display control function: PFD function with synthetic vision function, customizable mobile map, HUD and backup instrument functions;
- Communication navigation function: provision of navigation information, e.g. VHF voice communication, GPS navigation, air data navigation, attitude, ILS, VOR, DME, RA, etc;
- Sensor surveillance alarm: XPDR function, TAWS function, WXR function, RADAR function, EVS function, FLIR function, IFF function;
- Data conversion: data format conversion of A429, RS422, RS232 and Ethernet data to realize the data interaction between different data interface devices;
- Automatic flight servo control: autopilot control function;
- Turning Control Panel(TCP): frequency tuning, mode control and status indication functions of communication navigation, etc.;
- Audio Control Panel(ACP): control of audio information and volume adjustment of communication system and navigation system, etc;
- Weapon system: reserved interface, scalability of fire control system and load management functions.

Features

- On the basis of touch screen, UI exchange logic is redesigned to meet the operational requirements of modern humans.
- Westernized POP design, compliance with FAA&EASA regulation.
- Can rapidly finish task planning and route binding as graphic electronic flight bag is provided.
- Can reduce the flight crew number and increase security as manual calculating is replaced by performance calculating tools.
- Compatible with Jeppesen navigation database, and can meet the requirement of updating every 28 days.
- Can simplify pilots' operation process and improve security of the flight as Electronic checking list with "Normal, Abnormal, Emergency" mode is installed.
- High system integration, small module size, light weight, and low difficulty level of remoulding.
- Support EASA 23 for evidence collecting.
Avionics Products

DU-XV-02 Integrated Display Control Unit (DU)
(20”×8”/10”×8”/8”×6”)

Product Information of Integrated Display Control Unit (DU)

- Primary Flight Display Unit (PFD)
  1) Attitude Director Indicator (ADI);
  2) Barometric Altitude Indicator;
  3) Air Speed Indicator (ASI);
  4) Vertical Speed Indicator (VSI);
  5) Horizontal Situation Indicator (HSI);
  6) Course Deviation Indicator (CDI);
  7) Heading & Glide Slope Indicator (LOC&GS);
  8) Synthetic Vision System (SVS);
  9) 3D Terrain Awareness Warning System (3D-TAWS).

- Utility function display unit (MFD)
  1) Electronic checklist;
  2) Engine parameter display;
  3) Flight plan management;
  4) Flight map (departure/approach, airspace, aeronautical chart, etc.);
  5) Unit alarm;
  6) One-key toggle display (Six-Pack).

Tuning control panel (TCP)
  1) Display of current frequency and status;
  2) Radio frequency tuning;
  3) Standby frequency activation;
  4) Mode control.

Standards
- Minimum Performance Standard for Airborne Multipurpose Electronic Displays (SEA AS8034);
- General Requirements for Ergonomic Design of Military Visual Displays (GBJ 1062A-2008);

AP-XV-02 Auto Pilot (AP)

Product Information of Auto Pilot (AP)

- Mode Control Panel (MCP)
  1) Speed mode;
  2) F/D1 and 2;
  3) LVL mode;
  4) VNAV mode;
  5) HDG SEL mode;
  6) APP mode;
  7) VOR/LOC mode;
  8) LNAV mode;
  9) ALT mode;
  10) V/S mode;
  11) CMD1 and 2 mode;
  12) Disengage;
  13) TAS mode;
  14) Heading mode;
  15) Vertical Speed mode;
  16) Course mode.

- Auto Pilot (AP)
  1) Attitude, Speed control;
  2) Horizontal, Vertical navigation;
  3) Course guide.

Standards
- Airborne Equipment: Environmental Conditions and Test Procedures (RTCA/DO-160G);
- SAE AS 402B-2001 AP.

Application
- DO-228
- SAAB-340 aircraft
**DIU-XV-220 Data Interface Unit (DIU)**

Product Information of Data Interface Unit (DIU)

- 1) 20-channel ARINC429 signal processing capacity;
- 2) 10-channel Ethernet signal processing capacity;
- 3) 20-channel RS422/RS232 signal processing capacity;
- 4) 20-channel I/O signal processing capacity;
- 5) 10-channel analog signal processing capacity;
- 6) 5-channel CAN signal processing capacity.

**Interface**

**Standards**

Airborne Equipment-Environmental Conditions and Test Procedures (RTCA/DO-160G).

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**INI-XV-220 Integrated Navigation System (INS/GNSS)**

Product Information of Integrated Navigation System (INS/GNSS)

**Functions**

- 1) **Attitude heading measurement**: angle of pitch, roll angle, heading, angular rate, acceleration, speed, position;
- 2) **Satellite positioning measurement**: UTC, position, speed;
- 3) Dual redundancy architecture.

**Standards**

- Minimum Performance Standard for Tilt Pitch Instrument (SAE AS8001);
- Minimum Performance Standard for Gyro Stability Magnetic Heading Device (SAE AS8031A);
- Minimum Performance Standard for Turn & Sideslip Indicator (SAE AS8004);
- Airborne Equipment-Environmental Conditions and Test Procedures (RTCA/DO-160G).

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**IRE-XV-220 Communication Navigation System (CNS)**

Product Information of Communication Navigation System (CNS)

**Functions**

- 1) VHF two-way voice communication function;
- 2) VHF emergency communication function;
- 3) ILS navigation function (LOC, GS, MB);
- 4) VOR navigation function;
- 5) ADF navigation function;
- 6) DME navigation function;
- 7) RA altitude measurement function;
- 8) ATC response function (mode S);
- 9) Support ADS-B OUT broadcasting function;
- 10) ACP audio processing and control function.

**Standards**

- Minimum Performance Standard for VOR Radio Receiving Equipment with Working Range of 108–117.95MHz (DO-196);
- Minimum Performance Standard for ILS Course Beacon Receiving Equipment with Working Range of 108–112MHz (DO-195);
- Minimum Performance Standard for ILS Ginging Receiving Equipment with Working Range of 328.6–335.4MHz (DO-192);
- Minimum Performance Standard for VHF Radio Communication Transmitting Equipment with Working Range of 117.975–137.00MHz (DO-186B);
- Minimum Performance Standard for Air Traffic Control Radar Beacon System/Mode Selection (ATCRBS/Mode S) Airborne Equipment (DO-181D);
- Minimum Performance Standard for Audio Selection Panel and Amplifier (DO-170);
- Minimum Performance Standard for Beacon Receiving Equipment (DO-143);
- Minimum Working Performance Standard for Radio Attitude Measurement Equipment (DO-103);
- Minimum Working Performance Standard for Radio Distance Measurement Equipment (DO-189);
- Airborne Equipment-Environmental Conditions and Test Procedures (RTCA/DO-160G).

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**Air Data System (ADS)**

Product Information of Air Data System (ADS)

**Functions**

- 1) Dual redundancy architecture;
- 2) Air data measurement: indicated airspeed, true airspeed, total pressure/static pressure, total air temperature/static air temperature, angle of attack, angle of sideslip, Mach number, barometric altitude, vertical speed;
- 3) Airspeed head of air data system with pilot's manual heating function.

**Standards**

Company Profile

Chengdu Hermes Technology Co., Ltd. is a Chinese government certificated military avionics system manufacturer, which specialized in R&D, manufacturing and service of aeronautic system. Hermes-sys has more than ten years of experience in aviation engineering. Our team consists of elite talents in several fields, e.g. integrated avionics, UAV, imitative measurement and control, flight-test for navigability, electronic engineering, structural mechanics, industrial design and embedded system.

Core business of our company includes Advanced Integrated Avionics System, UAV Ground Control System, Simulator & Simulation Test.

So far, our technology and products have been widely used by aeronautic customers including Aviation Industry Corporation of China (AVIC), Commercial Aircraft Corporation of China (COMAC), China Electronic Technology Corporation (CETC), China State Shipbuilding Corporation (CSSC), China North Industries Group Corporation (NORINCO GROUP), Diamond Aircraft and DOTEC, etc.

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