INTEROPERABLE COMMUNICATIONS SOLUTIONS FOR AVIATION

Switch plus IP

HARRIS®
assuredcommunications®
harris.com
**SwitchplusIP**

Interoperable communications solutions for your critical missions

For over 60 years, Harris has been a trusted provider of mission and safety critical products, solutions, and services that support aviation organizations globally. Our leading edge solutions significantly improve the safety, security and capacity of our customer’s operations. Harris SwitchplusIP is an advanced true end-to-end IP communications system, complete with IP core, it is based upon simplified hardware and software components to make up a complex communications platform. The SwitchplusIP system provides users with the ability to access and control radio, telephony, intercoms and paging systems; both local and remote, using a single intuitive graphical user interface.

**SwitchplusIP BUILDING BLOCKS**

SwitchplusIP is designed around a “building block” architecture to provide expanded capabilities and capacities with simple, readily available components. All Harris SwitchplusIP communication systems are built from the same advanced modular, small footprint building blocks, packaged and qualified to suit the mission requirements and physical environment. This allows the system to scale from small transportable and vehicle mounted packages to large dispatch center systems. SwitchplusIP can be configured from small to large complex command center systems merely through the addition of the same common modules.
Operator Control Unit (OCU)
Flexible software application

“Seamless telephony and radio integration”

ADDITIONAL CAPABILITIES
> Roles based free seating
> Operator to operator intercoms
> Telephone group conferencing
> SIP standard interfaces
> Call history database
> Radio to telephone conferencing
> Radio interoperability
  > Any radio, anywhere, anytime
  > Unit ID, alias, status, messaging
  > Unlimited patching/crossbanding
  > Radio remote control
> Crash net capable
  > Secondary crash net
> Facility management
  > Lights
  > Doors
  > Sirens
> Public address (PA) capable
> Giant voice (GV) capable
> Fixed command post
> Comms on-the-move
  > Mobile command post
  > Transportable
  > Vehicle mounted
> Dual redundant
  > No single point of failure

SPECIFICATIONS
> Touchpanel PC (third-party COTS)

Connection Interfaces
> Headset
  > 2 x LEMO circular push-pull connectors (per jackbox)
> USB
  > For handset, desk microphone, PTT switch, speakers

SIMPLIFYING OPERATOR CONTROL

The SwitchplusIP Operator Control Unit (OCU) provides an integrated voice communications human machine interface that interconnects operators, radios and telephony. It provides advanced audio and control interfaces allowing users to achieve internal and external communication and conferencing with any available resource. The operator position hardware comprises an Operator Console Unit (OCU) which is typically a panel PC equipped with touch screen display and a Harris jackbox with associated accessories including speakers, handset, wired or wireless headsets and desk microphones. The graphical user interface that runs on the OCU, known as the Communications Control Application, permits the selection and control of all the communications resources connected to the system.

SIMPLIFYING CONFIGURATION

The OCU provides each user with complete control of their communications environment via an intuitive, highly-configurable touchscreen interface that is simple to use. The user interface provides access to all of the facilities required to perform their allotted tasks including: role logon, telephony and radio calls, radio control, telephones to radio patching, multiple audio stream conferencing, alarm monitoring, standard operating procedures, facilities control, etc. SwitchplusIP can be fully customized to meet any operational requirement.
Comms Server Unit (CSU)
Interoperability between 2-way radio and enterprise telephony via open standards based protocols

SPECIFICATIONS

- **Dimensions (W x H x D)**
  - 483 x 89 x 450 mm
  - 19 x 3.5 x 17.72 in

- **Weight**
  - 14.4 kg / 31.7 lbs

- **Mounting type**
  - Rack; 2U high

**Power Input**

- **AC**
  - 110–240 VAC, 50/60Hz, 6Amps

- **DC**
  - DC power available
  - Dual Power supplies (optional)

**Connection Interfaces**

- **DC power**
  - IEC

- **Ethernet**
  - 2 x IEEE 802.3 10/100 Base-T
  - 1 x RJ45 socket (two ethernet ports)

- **Telephony**
  - RJII

- **CODECS**
  - G.729, G.711 A–law, G.711 μ-law

- **Software protocols**
  - FoIP, SIP, VoIP, RTP, HTTP, AS-SIP
  - ED137 Volume 1 (radio)
  - ED137 Volume 2 (telephony)

SIMPLIFYING RADIO OVER IP TECHNOLOGY

The SwitchplusIP Communications Server Unit (CSU) is one of the SwitchplusIP primary building blocks and provides the powerful core of the SwitchplusIP system. The CSU is responsible for system-wide functions including overall SIP registry, event logging and central configuration version management. It also provides the interface to ED137 radios and ED137 telephony with telephony gateway services for the remainder of SwitchplusIP components. The CSU allows the SwitchplusIP system to seamlessly integrate telephone services including both Public Switched Telephone Networks (PSTN) and Private Branch Exchanges (PBX). It provides flexible call handling and call distribution (conferencing, transfer and hold) and a range of physical telephony interfaces (PRI ISDN (E1, T1), BRI ISDN, FXO, FXS, voice mail) and IP via SIP and H323 trunks. For small transportable applications the CSU functionality can be optionally embedded within the RIU.

SIMPLIFYING RADIO AND TELEPHONY INTEGRATION

The CSU is flexible and configurable by the addition of telephony cards. The telephony cards are available in either analog or digital with various combinations and quantities supported. For high availability applications, the CSU supports dual redundant configurations supporting dual LAN interfaces ensuring that mission critical audio always gets through to its destination. The CSU can also be used standalone as a fully functional soft PBX, integrated with other open standards based solutions or as part of a larger total Harris communications solution.
Radio Interface Unit (RIU)
Interoperability between resources via open standards Voice over IP

SIMPLIFYING RADIO OVER IP TECHNOLOGY

The RIU is one of the Switch plusIP core building blocks and provides a seamless interface between radios and telephony assets using open standards Voice Over IP technology. Within its super compact, ruggedized footprint, the RIU provides support for four programmable audio devices each with its own serial port for configuration or data transmission. It uses dedicated DSP audio processing resources to efficiently convert the audio from these devices to standards-based Voice over IP (VoIP) which can be streamed to any compatible device via the LAN. It also supports dual LAN interfaces ensuring that mission critical audio always gets through to its destination.

SIMPLIFYING CONFIGURATION

The RIU can be used standalone as an SIP-based Radio Over IP (ROIP) gateway, integrated with other open standards type solutions such as RTP (WAVE) or as part of a larger total Harris communications solution. It is ideally suited for Vehicle Interoperability Solutions, Mobile Fly Away Kits and anywhere you need extensive capability in a small ruggedized footprint. The RIU is easy to configure and provides direct connection interfaces to a range of audio equipment including conventional and trunked radios, public address systems, monitor speakers and intercoms.

SPECIFICATIONS

- Dimensions (W x H x D)
  - 148 x 44 x 380 mm
  - 5.75 x 1.75 x 14 in
- Weight
  - 2.0 kg / 4.4 lbs (without ETX module)
  - 2.5 kg / 5.5 lbs (with ETX module)
- Mounting type
  - Rack or shelf mountable; 1U high
- DC power
  - 48 VDC, 500 mA (standard)
  - 24–60 VDC, 500mA (extended range)
- AC
  - 110–240 VAC
  - Requires use of AC–DC power adapter (P/N: 685-335-040)

Connection Interfaces

- DC power
  - circular push/pull lock/release socket Fischer 3 pin circular DBPC 102 A052–130
- Ethernet
  - 2 x IEEE 802.3 10/100 Base-T
  - 1 x RJ45 socket (two ethernet ports)
- Radio devices
  - 4 x 26 pin High Density D-Sub connector, 1 per radio connection
- Audio
  - 4-wire analog, transformer coupled DC blocked, 0 dBm/600Ω input/output
- PTT switch
  - normally open contact
  - 150 mA/200V max
- CODAN
  - 5–25VDC optically isolated
- Serial
  - RS232 @ standard rates up to 115.2 kbaud (1 per radio port)
  - RS422/RS485 available with appropriate interconnection cabling
- CODECS
  - G.729, G.711 A–law, G.711 μ–law
- Software protocols
  - FoIP, SIP, VoIP, RTP

Environmental

- Protection
  - IP65 rated enclosure & connectors (when connectors covered or mated)
- Operating temperature
  - -20°C to +60°C / -4°F to 140°F (MIL-STD 810G – 501.4 & 502.4 (Op. Tablet))
- Storage temperature
  - -40°C to +75°C / -40°F to 167°F (MIL-STD 810G – 501.4 & 502.4 (Non-Op))
- Vibration (vehicle/integrity)
  - MIL-STD 810G – S14.5–C3
  - MIL-STD 810G – S14.6–C17
- Transit shock
  - MIL-STD 810G – S16.5
- EMI/EMC
  - MIL-STD 461
- Altitude
  - 22,000 ft (operational)
Harris is dedicated to developing best-in-class assured communications® products, systems and services.