

High Reliability Intercommunication Systems for Multi-level Security Applications

Features

Simultaneous CLEAR and SECURE Transmissions

TEMPEST Qualified to NSTISSAM TEMPEST/1-92 Level 1 and NACSIM 5100A

Greater than 120dB Crosstalk Isolation

EMP/Lightning Hardened

Voice and Data Switching with Binaural Audio

Wideband Audio

Radio and Crypto Control

Crypto/Modem Switching

Both Redundant and Emergency Backup Operations

Recorder Control/Playback

Lightweight, Low Power Consumption

Convection Cooled, No Forced Air Required

High Reliability and Low Mean-Time-To-Repair (MTTR)

Built-in Test

Standard Interfaces: MIL-STD-1553, RS-422 (Optional: Ethernet)

Night Vision Goggle Compatible/Daylight Readable

Alarm Generation

Radio Relay (Clear and Secure)

Compatibility with All Standard Headsets and Microphones

Multi-headset Interface at Each Position

The Palomar Products CCS-2100 Communications Management Systems

The CCS-2100 family of products provides a wide range of solutions for secure airborne intercommunication applications. The ultra-high channel-to-channel isolation allows the management of multi-level secure communication assets and crew stations.

The integrated, microprocessor controlled, modular distribution system is designed to meet modern net-centric multi-mission operational requirements. It offers reliable real-time control of communication and data assets in the most demanding battlefield conditions.

Palomar's flexible and modular architecture can be scaled from simple internal/external communication systems up to full command and control systems that include crypto and data link assignments, clear/secure radio relay, clear/secure simulcast, unlimited conference networks and selective dial-up. Systems can be interfaced to mission computers via standard network links.



Depth
6.73 in.
Width
5.75 in.
Height
6 in.
Weight
5 lb max

Control Unit Display (CDU)

The CDU is a microprocessor-based control and display unit that gives the crew member access to radio and intercom audio channels. The full-function keyboard allows the user to control transmit and receive functions such as assignment of all communication assets including crypto units, data-link modem switching, radio relay and display of Built-In-Test (BIT) readouts. Complete status of the communication assets for each

operator can be viewed on the liquid crystal color display. Units are connected via a serial RS-422 bus.

The CDU display indicates which radio channel or intercom net is currently selected for transmission as well as the current clear/secure status of the selected transmitter.

With an outstanding audio quality of 20 Hz to 20 KHz receiving bandwidth; the CDU is the right choice for crew positions that need wideband aural performance (e.g. spatial audio for sonobuoy operators). The CDU can be configured for binaural or monaural headset operation depending on the mission requirements for specific crew positions.



Depth
5.85 in.
Width
5.75 in.
Height
6 in.
Weight
4 lb max

Integrated Panel Crew Station Unit (IPCSU)

Up to 60 radio channels and intercom networks can be accessed through the IPCSU when used with a full ATR CCU.

Receive and Transmit channels are selected via simple push-button keys. When a channel is selected, its status LED is illuminated and its volume is automatically set to mid-range or to the level set after power-on. Panel LEDs also display the channels selected for transmit and their associated security level. Receive and transmit indicators can be pro-

grammed to flash if there is receive or transmit activity on a given channel.

The panels can be customized to allow for additional control features. These include crypto switching, modem switching, clear/secure selection, radio relay and others. The panel can also be set up to allow selection of several conference intercom nets, direct access channels to crew positions or dial-up calling. Other typical panel features are ICS Disconnect, Alternate ICS and PTT ICS/radio select.



Communications Control Unit (CCU)

The CCU networks and controls the links between communication assets and crew members. The CCU is a modular, microprocessor controlled, TEMPEST qualified secure unit that is integrated into the communications suite to provide the necessary control and switching of all internal and external, clear and secure voice and data lines by the crew members.

The CCU is available in half and full ATR size depending on system and redundancy requirements. The unit can be interfaced to mission computing via MIL-STD-1553B data buses or optional Ethernet connections. Its modular circuit card assembly design allows the CCU hardware to be tailored to meet multiple platform requirements. Flexible firmware functionality enables a single CCU type to be used on multiple platforms with different configurations and communication plans. It is this flexibility that enables its use from small internal/external communication systems up to full command and control systems. Larger and more complex systems can include crypto and data link assignments, clear/secure radio relay, clear/secure simulcast, unlimited internal conference networks and/or selective dial-up.

Depth
3.10 in.
Width
6.3 in.
Height
4.25 in.
Weight
2 lb max



Maintenance Station Unit (MSU)

The MSU provides interphone channels to remote aircraft locations for maintenance functions or remote crew interphone stations. Each MSU provides a headset connection, adjustable volume control, HOT MIC, and CALL functions. MSUs come in a variety of sizes.



Full ATR
Depth
19.52 in.
Width
10.12 in.
Height
7.62 in.
Weight
46.5 lb max



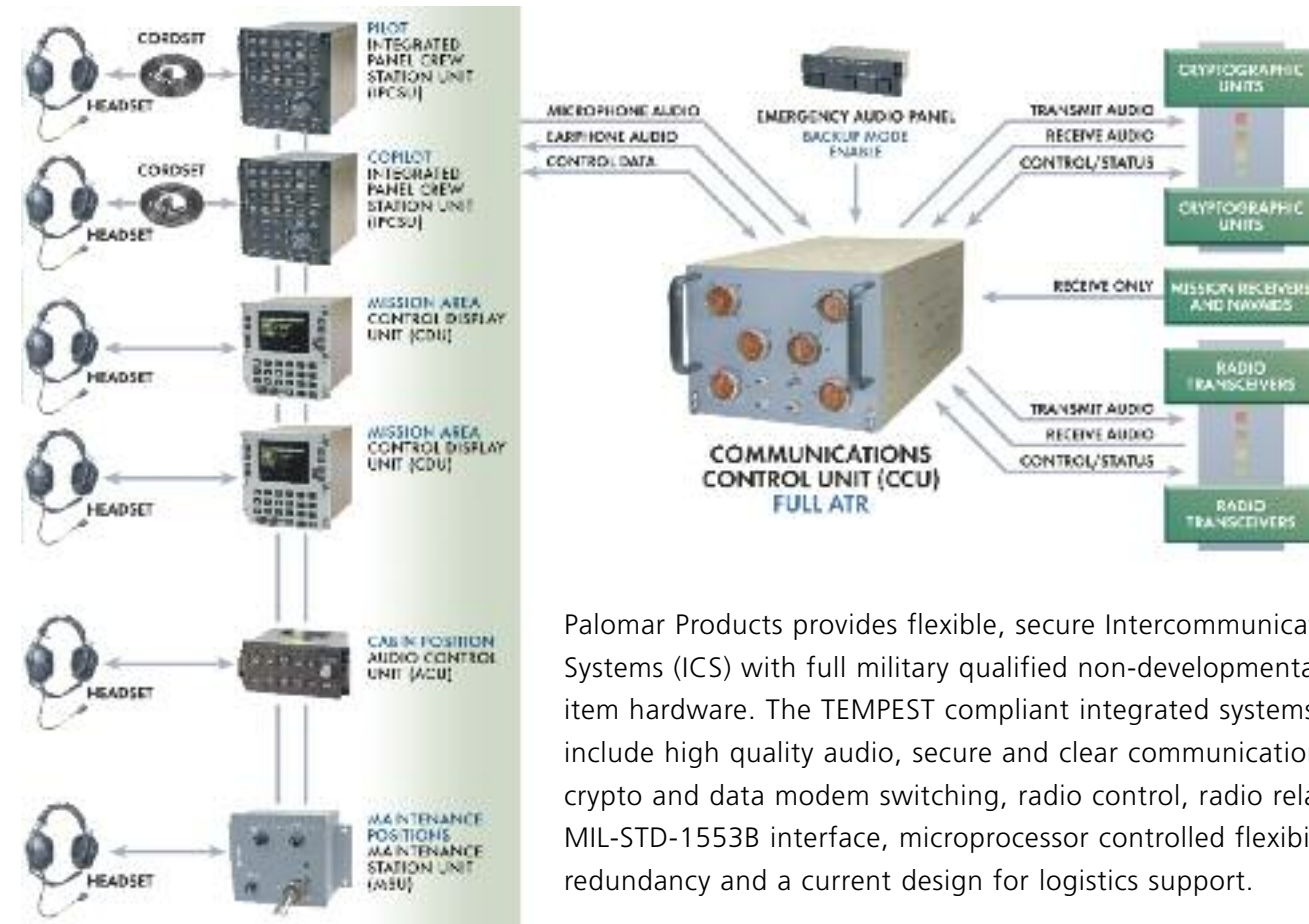
Half ATR
Depth
19.52 in.
Width
4.88 in.
Height
7.62 in.
Weight
19 lb max



Audio Control Unit (ACU)

The ACU provides access to radio and intercommunication channels in a small form factor. Up to 30 radio and/or intercom channels can be assigned to the panel pushbuttons.

CCS-2100 Typical System Architecture



Palomar Products provides flexible, secure Intercommunication Systems (ICS) with full military qualified non-developmental item hardware. The TEMPEST compliant integrated systems include high quality audio, secure and clear communications, crypto and data modem switching, radio control, radio relay, MIL-STD-1553B interface, microprocessor controlled flexibility, redundancy and a current design for logistics support.

CCS-2100 Performance Characteristics

Start-up Time (typical):

2 Seconds

Radio Receiver Levels:

0 to +24dBm

Radio Transmit Levels:

0 dBm \pm 3dB

Microphone Input:

0.045 mV nominal (low level)

500 mV nominal (high level)

Headphone Output:

Up to 1 watt into an 8 ohm load

(mono or binaural)

Crosstalk Isolation:

Greater than 120 dB

Audio Quality:

<5% harmonic distortion

<0.5 mV rms noise

>5 kHz bandwidth transmit

18 kHz bandwidth receive

Speech Intelligibility:

91% during peak ambient noise conditions

Electrical Power:

28 V per MIL-STD-704

Environmental:

Designed to MIL-E-5400T

Tested to MIL-STD-810C

EMI/EMC:

mil-std-461

TEMPEST:

NSTISSAM TEMPEST/1-92 Level 1

and NACSIM 5100A

Reliability (typical for P-3C Program)

Predicted series MTBF: >3300 hours at 35°C

Maintainability:

MTTR of 0.25 hour

Extensive built-in-test

Programs

P-8A POSEIDON	BOEING / U.S. NAVY
P-8 INDIA (P-8I)	BOEING / INDIA
737 AEW&C WEDGETAIL	BOEING / ROYAL AUSTRALIAN AIR FORCE
737 AEW&C PEACE EAGLE	BOEING / TURKISH AIR FORCE
KOREAN 737 AEW&C	BOEING / REPUBLIC OF KOREA
AWACS	BOEING / USAF / SAUDI / NATO / UK / ROF / JAPAN / USAF BLOCK 40-45
VH-3D / VH-60N / VH-71A	VIP
COMBAT TALON II	USAF SOF
TACAMO/ABNCAP (E-6B)	U.S. NAVY / USAF
P-3 AEW&C	LOCKHEED / U.S. CUSTOMS
SPECIAL MISSION P-3s	U.S. NAVY
NP-3	U.S. NAVY
SEA SENTINEL (AP-3C)	L-3 / ROYAL AUSTRALIAN AIR FORCE
CP140	THALES / CANADIAN FORCES
AIRBORNE LASER	BOEING / USAF
CL604	BOMBARDIER / ROYAL DANISH AIR FORCE
AC-130H / U GUNSHIPS	USAF SOF
HC-130J DEEPWATER	LOCKHEED / USCG
GERMAN P-3	U.S. NAVY FMS / GERMAN NAVY
KOREAN P-3	L-3 / ROKN
PORTUGAL P-3	LOCKHEED / PORTUGUESE AIR FORCE
PAKISTAN P-3	LOCKHEED / PAKISTAN NAVY
TAIWAN P-3	LOCKHEED / TAIWAN

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