DACS

Digital Audio Control System

2009 Data Sheet

The most important thing we build is trust

ACP53 Audio Control Panel

AMU50 Audio Management Unit

RM01 Remote Memory

ACP51 Audio Control Panel

Features:

- Digital audio processing & control
- Designed for tactical operations
- Enhanced performance
- Reduced system weight
- Reduced installation cost & complexity
- Flexible & configurable using DACS software

The Digital Audio Control System (DACS) is a communications management system with the ability to distribute and control all audio in an aircraft, to/from all transceivers, receivers and aural alert sources. The integrated, multi-channel intercom system and programmable user definition allow the audio system to be configured to suit customer specific communication schemes.

The major components in the system are Audio Control Panels (ACP51 and/or ACP53), Audio Management Unit (AMU50), and Remote Memory (RM01). The primary component in the system is the Audio Management Unit. Connected to it are transceivers (up to 8), receivers (up to 8), Direct Audio inputs (up to 6), and Audio Control Panels (up to 6). The Audio Management Unit distributes all radio audio to each user. Seven headsets can be connected to the Audio Management Unit (basic configuration is two crew and five passengers).

Each passenger headset can also be assigned to a specific ACP, upgrading the passenger to a fully capable crewmember. More than one headset can be assigned to an ACP. The system architecture is a 'star' configuration (separate serial connections to each Audio Control Panel) to prevent loss of the entire system because of a failure of one connection.

The ACP is currently available in two different packages, one designed for the flight crew (transceiver audio and receiver audio controls) and one designed for cabin crew/mission specialists (transceiver audio controls only). Both units still retain all other mode and function controls, and feature 'snap-in' labels.

The audio control panels are 'terminals' that monitor switch selections and provide system power up status indicators, while communicating with the Audio Management Unit over separate serial data busses. All audio processing is completed in and all audio connections are made to the Audio Management Unit, reducing installation costs, weight and complexity, while offering improved performance.

RM01, the remote memory unit for DACS, is a small, remote mounted device that connects to the AMU50 via a digital bus. The RM01 stores the system's configuration and aural alert files 'remotely', allowing replacement of the AMU50 without having to reconfigure the replacement unit on the bench or in the aircraft.

Today's aircraft have many warning/advisory signals that need to be heard by the flight crew. Older audio systems are usually limited in the number of warnings signals they support, which can become costly integration issues. The DACS has been designed with the modern cockpit in mind, providing six direct (unswitched) audio inputs. These inputs are fixed gain type, but can be adjusted using the configuration management software. Selection of the direct audio inputs is configurable using the DACS configuration management software.

The system also has an integrated aural alert generator, providing eight tone/voice warnings with multiple levels of priority. The configuration software also allows the customer to load their own warning/alert messages (.WAV files). The system's flexibility allows the DACS to be easily configured to support customer requirements on a per installation basis.

This system's configuration is defined and loaded using a computer and DACS DevCS (Device Configuration Software). This includes the number of radios, number and type of users, headset impedances, number of ACP's, number and type of user associated with each ACP, VOX control for the passengers, input/output levels for the transceivers and receivers, and numerous other configuration options.

Compared to an analog audio system, the DACS provides a much simplified installation, improved performance (configurable, more features, reduced crosstalk, higher immunity to noise, etc.), reduced installation and maintenance costs, and a large weight savings.

For further information please contact:

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"DACS - your mission, our solution."

ACP53 Audio Control Panel

ACP51 Audio Control Panel

ACP Audio Control Panel

The Audio Control Panel (ACP) is the 'human' part of Digital Audio Control System (DACS) and provides all user input/output functions. In essence, the ACP is a terminal that sends and receives signals to/from the Audio Management Unit (AMU) and displays system status by way of a series of annunciators integrated into the front panel of the ACP.

User controls are simple and functional in the layout, providing optimum capability in the smallest package possible while still retaining realistic man-machine interface (MMI) characteristics.

With front panel control for up to 8 transceivers, up to 8 receivers, operational mode select, ISO/CALL capability, intercom mode select, and ICS/RX master volume controls, the ACP offers everything the special-role aircraft crew needs to manage their communications.

A new twist has also been added to the radio labels or legends - they are now 'snap in' type. This allows the OEM and/or installing agency to order and receive standard configuration ACP's and then 'customize' the labeling of the ACP's to best suit the radio package on the aircraft. This helps to reduce the lead-time for the hardware and reduces the number of part numbers that need to be maintained. For the OEM, having standard parts available that can be easily 'customized' to suit customer requirements represents a substantial saving in internal costs.

The ACP is currently available in two different packages, one designed for the flight crew (transceiver audio and receiver audio controls) and one designed for cabin crew/mission specialists (transceiver audio controls only). Both units still retain all other mode and function controls.

The cost and size savings available in the 'reduced' ACP allow the customer to maintain the communications capability needed for the cabin crew/mission specialists while saving critical space and capital.

ACP5x Legend Kits

The introduction of the DACS hardware, and in particular the faceplates on the ACP5x Audio Control Panel (ACP), bring a new product concept. The radio legends are now 'snap-in' type, allowing the OEM and/or the installing agency to order ACP's and then be able to customize the radio text to best suit the com/nav package on the aircraft.

The 'snap-in' legend approach will reduce both the lead time of customized products and the quantity of part numbers to be maintained.

A legend kit, p/n ACPLK-xxx, will be supplied with all ACP5x units, except for specific OEM contracts. Each ACPLK-xxx will be made up of either qty. 16 (for the ACP51) or qty 24 (for the ACP53).

The legend kits include a number of alternative radio labels for the 'tactical' radios, alternatives for the 'navs' and some blanks for non-active positions on the faceplate. Additional existing legends, other than what is presently in the ACPLK's, are available at an additional cost and would need to be ordered separately. ACP5x product pricing has included the legend kit costs, for a standard kit. The legend kit will need to be identified and ordered as a separate, no charge line item.

The individual legends are considered a fabricated part and follow the part number series '55-06-xxxx', which allows a maximum of 4 characters (alphanumeric) for the legend. For example, p/n '55-06-VHF1' will have 'VHF1' on the snap-in legend. The one exception to this is the 'blank' legend which is p/n 55-06-000, and is defined as 'Legend, Blank, Black'.

A one-time set-up fee is charged for all new design legends. New customized legends will be added to the Legend Part Number list. Contact the factory's Product Support department for a copy of the list.

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AMU50 Audio Management Unit

RM01 Remote Memory

AMU Audio Management Unit

The Audio Management Unit (AMU) is the 'heart and brains' of the Digital Audio Control System (DACS). All connections to/from the aircraft systems and radios terminate into the AMU, as do the ACP's and headset connections. All operator input commands are received and actioned inside the AMU.

The AMU has been designed for the 'special mission' aircraft environment but is highly adaptable and can be used in many different aircraft applications and missions. Its flexible configuration, defined and set by the installing agency through the use of the DACS Device Configuration Software (DevCS) tool, allows 'standard' products to be sourced and delivered and then be customized to suit the aircraft and radio equipment requirements.

The AMU is designed to support up to 8 transceivers, up to 8 receivers, 6 direct/unswitched inputs, six ACP's, and a total of 7 headsets. The headset circuitry can be configured to be military or commercial type. Each headset can be assigned to its own ACP or multiple headsets can be assigned to the same ACP. If the headset is not assigned to an ACP, it defaults to a 'Passenger' position with limited capability.

The AMU also has an integrated Aural Alert Generator, capable of supporting up to 8 voice/tone warnings. Each alert can be assigned a priority depending on what the audible warning is used for.

The voice/tone alerts can be selected from a preprogrammed list provided with the DevCS, or can be created and downloaded into the DevCS by the customer. The discrete inputs that 'trigger' the audible alert signals can be individually set to be +V or ground activated.

The AMU also provides the capability to 'isolate' or split the intercom channels in the aircraft, allowing 2 'talk groups' to be created in the aircraft. This is particularly useful for operations where it is necessary to be able to split the flight crew from the cabin crew or passengers. The unit also provides a CALL circuit to allow the isolated group to reconnect with the flight crew.

Other features include a redundant back-up power supply, emergency mode operation for the two primary ACP's, a rugged design and an ICS Tie Line to allow for expansion of the system. Using the DevCS, the ICS Tie Line can be set for digital or analog operation. In analog mode, the ICS Tie Line can be connected to legacy products.

RM01 Remote Memory

The RM01 is the remote memory unit for DACS. It is a small, remote mounted device that connects to the AMU50 via a digital bus and receives regulated power from the AMU50. The RM01 stores the system's configuration and aural alert files 'remotely', allowing replacement of the AMU50 without having to reconfigure the replacement unit on the bench or in the aircraft.

When the DACS hardware is powered up, the AMU50 and RM01 compare the system configuration and aural alert files. If they are the same, system operation commences. If they are different, the configuration data from the RM01 is downloaded within 3 minutes into the AMU50, then system operation commences.

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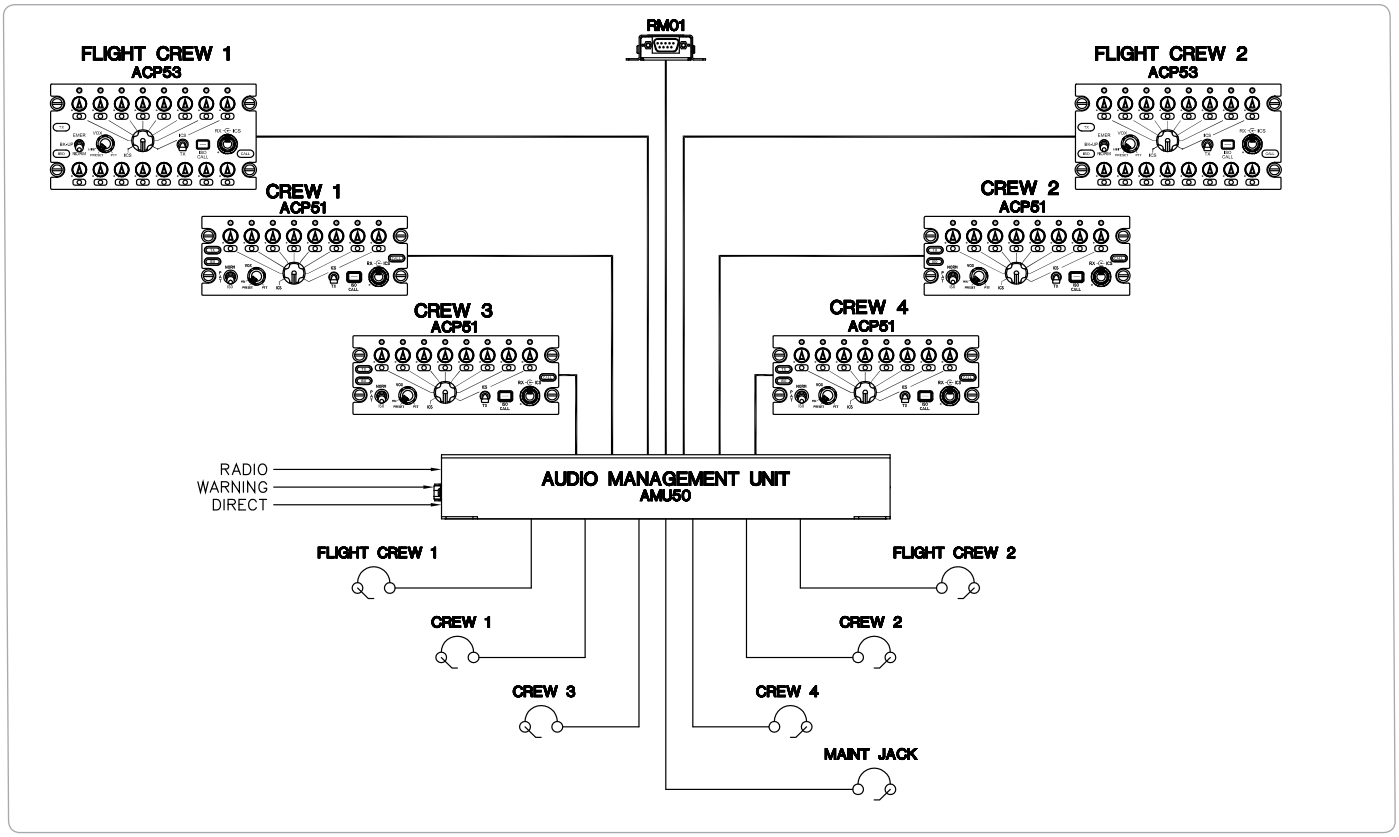
Technical Specifications



Power:	27.5 Vdc, 2.5A nominal
Microphone Inputs:	7 inputs, 3 impedances selectable: 5 ohms (250 uVrms), 75 ohms (850 mVrms) or 150 ohms (250 mVrms)
Headphones:	7 outputs, 3 impedances available: 8 ohms (250 mW), 150 ohms (250 mW), or 600 ohms (250 mW)
Radio Audio Inputs:	16 inputs, 1 to 20 Vrms input range 600 ohms input impedance
Radio Mic Outputs:	8 outputs, 50 mVrms to 1 Vrms output range, < 60 ohms output impedance
Radio PTT Outputs:	8 outputs, active Lo
Direct Audio Inputs:	6 inputs, fixed audio output levels, 1 to 15 Vrms input range, 600 ohms input impedance
CVR Outputs:	2 CVR outputs, one for pilot and one for co-pilot, < 600 ohms output impedance, 500 mVrms output
Aural Warnings:	8 internal alerts, messages are .WAV files, assigned by configuration management software, can be active Hi or Lo
DF Blanking Output:	1 blanking output, active Lo
Music Inputs:	2 inputs, 2 input ranges - 400 mVrms or 2.5 Vrms, 1000 ohm input impedance

ACP/AMU Protocol:	RS-422
Lighting:	5/28 V standard, 5 V optional, NVIS compliant versions optional

Dimensions:

ACP51:
2.25" H x 2.62" D x 5.75" W (57.2 mm x 66. 5 mm x 146.0 mm)

ACP53:
3.00" H x 2.62" D x 5.75" W (76.2 mm x 66.5 mm x 146.0 mm)

AMU50:
2.23" H x 11.00" D x 7.48" W (56.6 mm x 279.4 mm x 190.0 mm)

RM01:
0.71" H x 1.69" D x 2.21" W (18.0 mm x 42.9 mm x 56.1 mm)

Weight:

ACP51:	1.01 lbs max. (0.46 Kg)
ACP53:	1.76 lbs max. (0.80 Kg)
AMU50:	4.11 lbs max. (1.87 Kg)
RM01:	0.09 lbs max. (0.04 Kg)

Compliance:

TSO-C139 - Aircraft Audio Systems and Equipment
DO-214, Class Ib DO-178B, Level C

ETSO-C50c - Audio Selector Panels and Amplifiers
DO-214, Class Ib

DO160E Env. Cat.
[(A4)(D1)]-BBB[(SBM)(U2FF1)]XXXXXXZZAZ[ZC][RR]H[A3J33]XXXX