МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РЕСПУБЛИКИ КАЗАХСТАН
АО «АКАДЕМИЯ ГРАЖДАНСКОЙ АВИАЦИИ»

Тема: **PASSENGER ENTERTAINMENT SYSTEM - VIDEO (for 551)**

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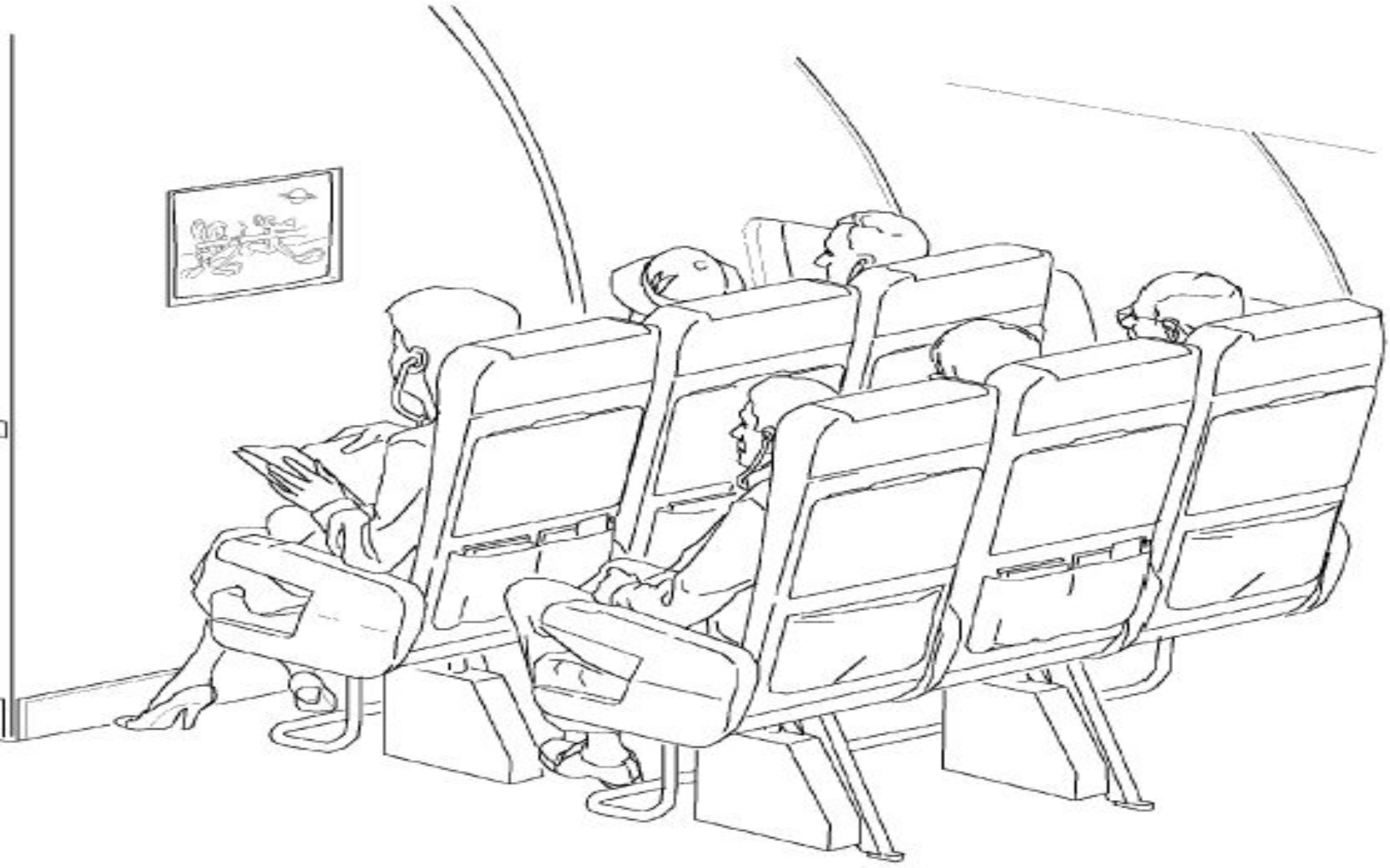
General

- The passenger entertainment system - video (PES-video) provides video programs for the passengers.
- The video programs have video and audio. The video goes to monitors throughout the cabin. The audio goes through the passenger entertainment system - audio (PES-audio).
- Passengers receive this audio through headsets attached to the passenger service units in the seats. The audio can go through the passenger address system. Passengers receive this audio through speakers in the passenger service units.



PASSENGER ENTERTAINMENT SYSTEM - VIDEO - INTRODUCTION

General

- The passenger entertainment system - video (PES-video) provides video programs to the passengers. These are the major components of the PES-video:
- * Video tape reproducer (VTR)
- * Video system control unit (VSCU)
- * Video distribution unit (VDU)
- * Video monitor.
- The PES-video also provides data about the flight to the passengers. The digital interface unit (DIU) provides flight information to the passengers.

Video Sources

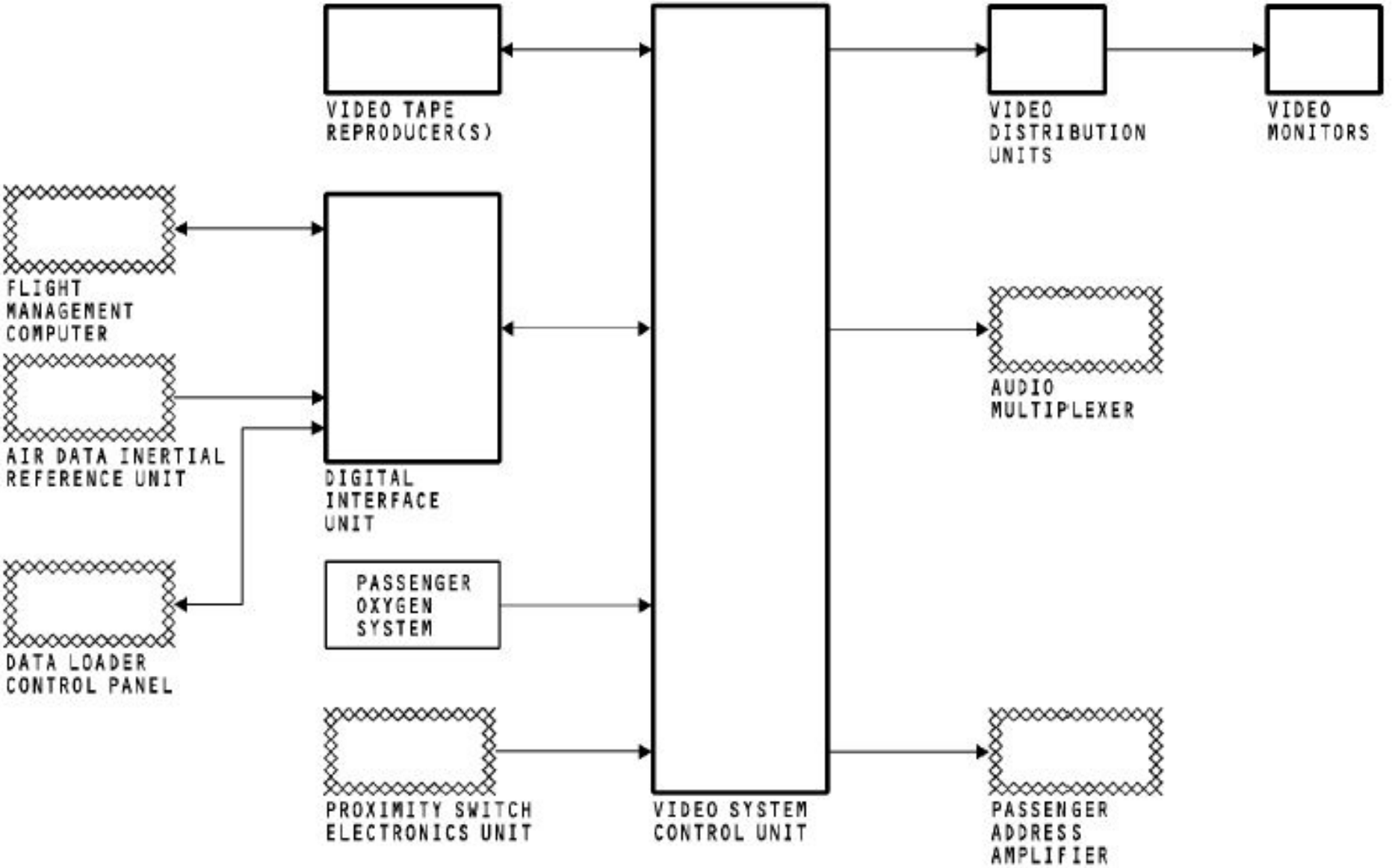
- Video tapes provide programs to the passengers. You put the video tapes into the video tape reproducers (VTR). The VTRs send the video and audio signals to the video system control unit.
- The digital interface unit provides flight data to the passengers.
- The DIU sends video signals to the video system control unit.
- The digital interface unit receives signals from these systems:
- * Air data inertial reference system (ADIRS)
- * Flight management computer system (FMCS).

Control

- You use the video system control unit to control the operation of the PES-video. The video system control unit sends signals to the VTRs. These signals turn on the VTRs and control the video tape.
- You use the airshow control unit to control the flight data to the passengers. The airshow control unit sends signals to the digital interface unit. These signals tell the digital interface unit which data to show the passengers.
- A signal from the passenger oxygen system stops the video program when passenger oxygen masks deploy.
- The proximity switch electronics unit (PSEU) provides air/ground, parking brake, and landing gear signals to the video system control unit.

Distribution

- The video system control unit sends control signals and three video signals to the video distribution units. The video system control unit tells each video distribution unit when to turn on the monitors and which video signal to send to the monitors. One video distribution unit controls two monitors.
- The video system control unit sends the audio from the video program to the passenger entertainment system - audio (PESaudio).
- The PES-audio distributes the audio to the passenger control units in the passenger seats. Passengers connect headsets to the passenger control units and set the control for the video channel when they want to listen to the video program.
- When you want the audio to go the speakers in the cabin, the video system control unit sends the audio to the passenger address system. The passenger address system distributes the audio to the speakers in the cabin.



PES-VIDEO - GENERAL DESCRIPTION

Cabin

- The video control center is in the overhead stowage bin on the right side in the aft end of the cabin. The video control center has these components:
- * Video tape reproducers
- * Video system control unit.
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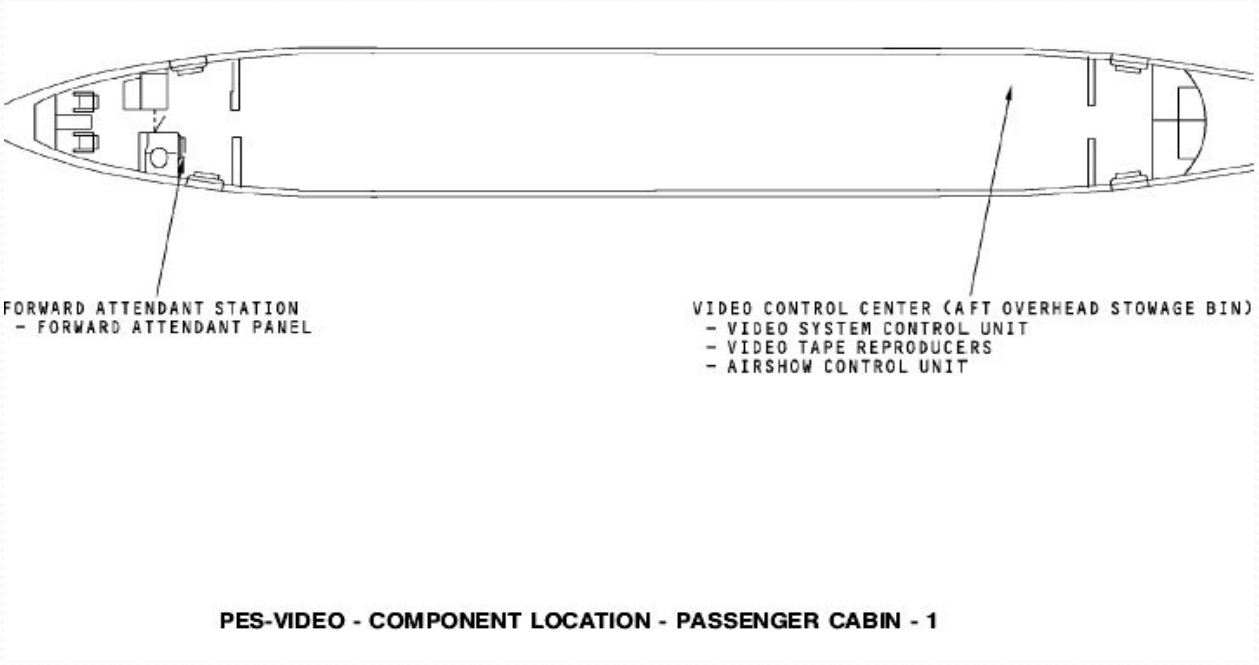
- The forward attendant panel is at the forward attendant station.



Cabin

- There are video monitors in the passenger service units (PSUs) above the passengers.
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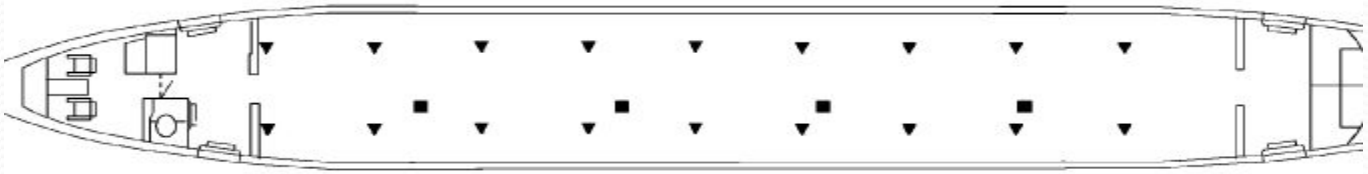
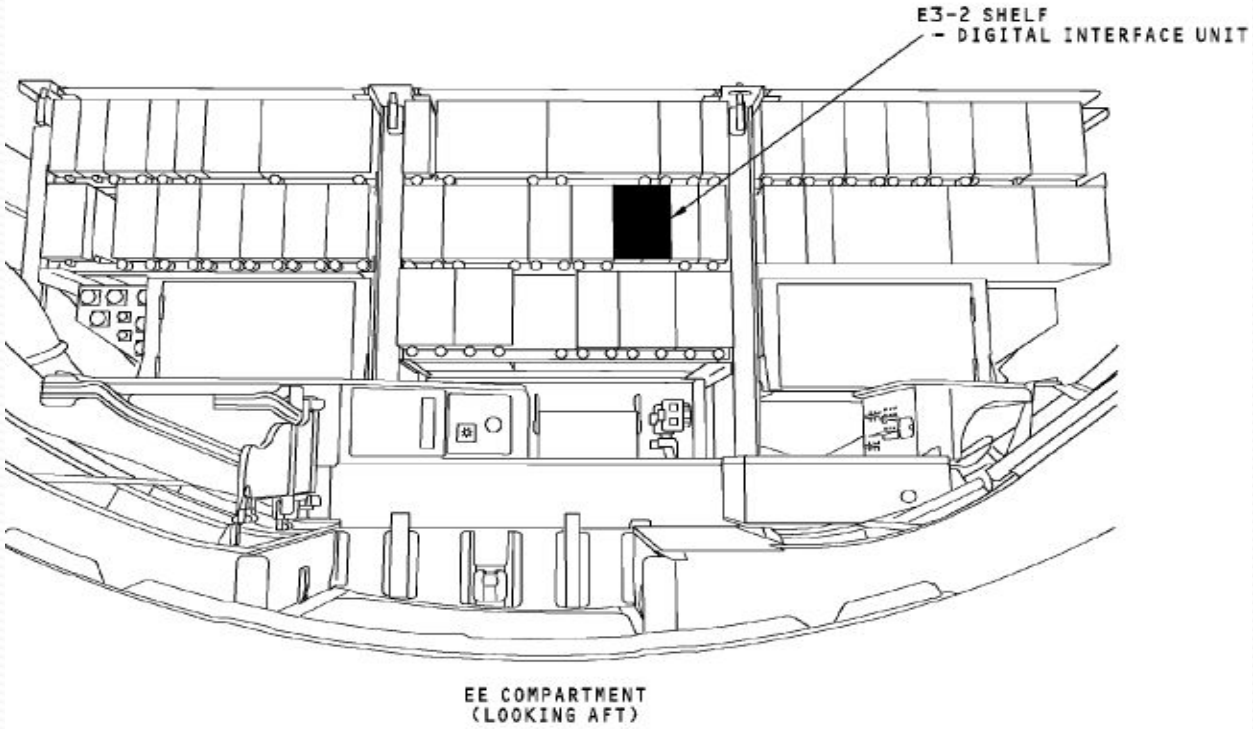
- The video distribution units (VDUs) are above the ceiling. The VDUs are in groups. A VDU group has one, two, three, or fourVDUs.



CEILING/BULKHEAD
 - VIDEO MONITOR ▼
ABOVE CEILING
 - VIDEO DISTRIBUTION UNIT(S) ■

PES-VIDEO - COMPONENT LOCATION - PASSENGER CABIN - 2

Electronic Equipment Compartment



PES-VIDEO - COMPONENT LOCATION - EE COMPARTMENT

Power

- The 28v dc bus 2 supplies power to these components:
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- * Digital interface unit
- * Video tape reproducers
- * Video system control unit.
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- The 115v ac main bus 2 supplies power to these components:
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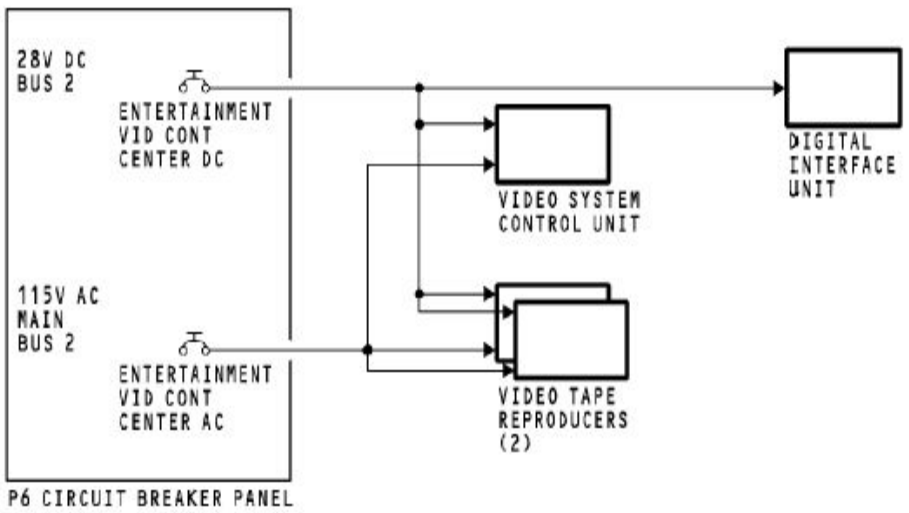
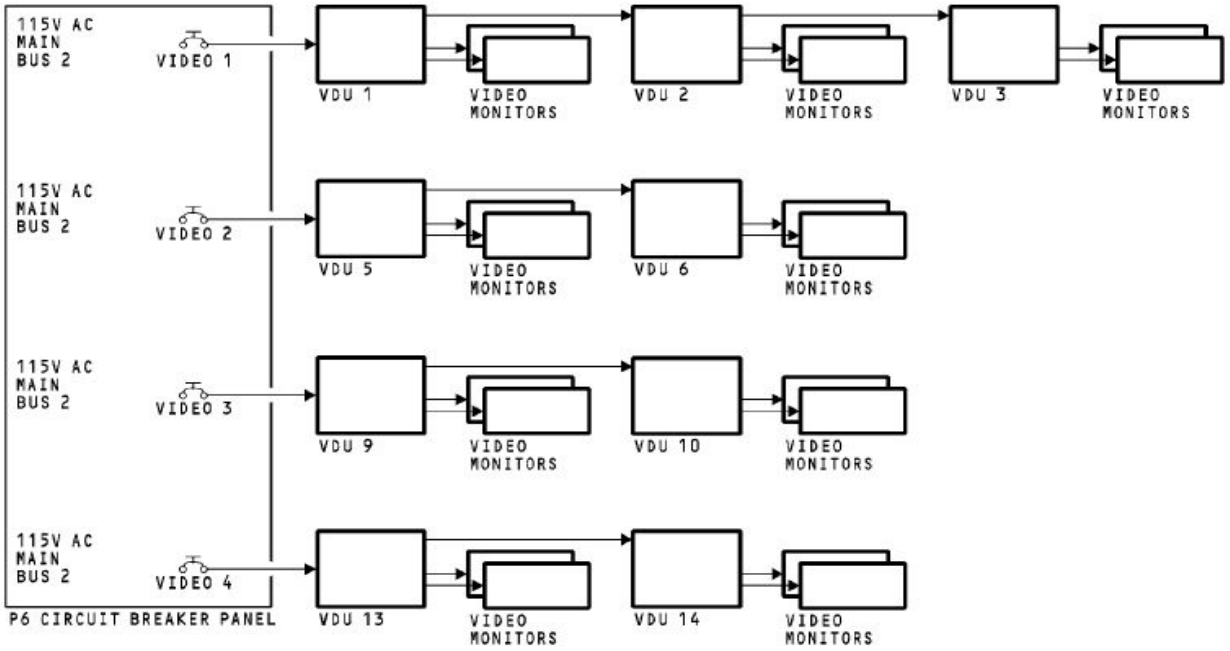
- * Video system control unit
- * Video tape reproducers.



PES-VIDEO - POWER INTERFACES 1

Power

- The video distribution units (VDUs) receive a signal from the video system control unit (VSCU) to turn on the video monitors.
- When the VDUs receive the signal, they supply 115v ac power to the video monitors



General

- The video tape reproducers (VTRs) transfer information to and receive information from the video system control unit (VSCU).
- The passenger address system and the passenger oxygen system provide discrete inputs to the video system.
- **Video Tape Reproducer**
- There is a bi-directional RS485 data bus between the video tape reproducer and the video system control unit.
- The video system control unit sends commands to the video tape reproducer to control the operation of the video tape reproducer.
- The video tape reproducer sends status information to the video system control unit.
- The video tape reproducer plays video programs. The video tape reproducer sends the video and three separate audio signals to the video system control unit.

Passenger Address System

- The passenger address system sends a discrete signal to the video system control unit. The discrete is a ground when there is a push-to-talk (PTT) from any one of these sources:
- * Flight crew (priority 1)
- * Cabin attendants (priority 2)
- * Tape reproducer for pre-recorded announcements (priority 3).
- When the passenger address discrete is a ground, the video system control unit tells the video tape reproducers to pause.
- **Passenger Oxygen System**
- When the passenger oxygen comes on, the oxygen indication relay energizes. This causes the VSCU to shut down. When the VSCU is off, the video tape reproducers stop and the video monitors shut down.

- **Air/Ground System**
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- The proximity switch electronics unit (PSEU) provides discretes which the VSCU uses to identify the phase of a flight. The VSCU can start or stop video programs when the airplane gets to a specific phase of flight.
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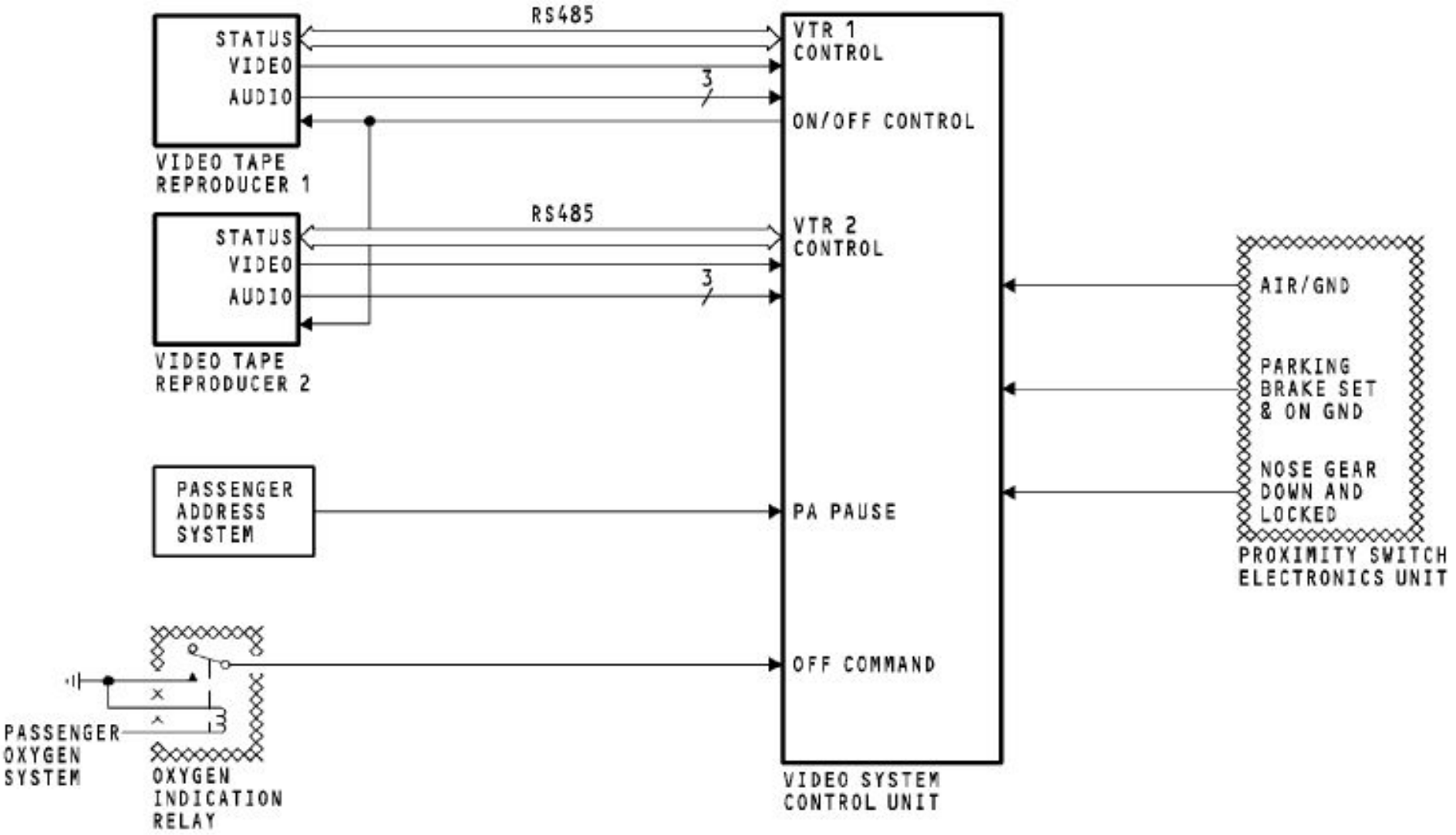
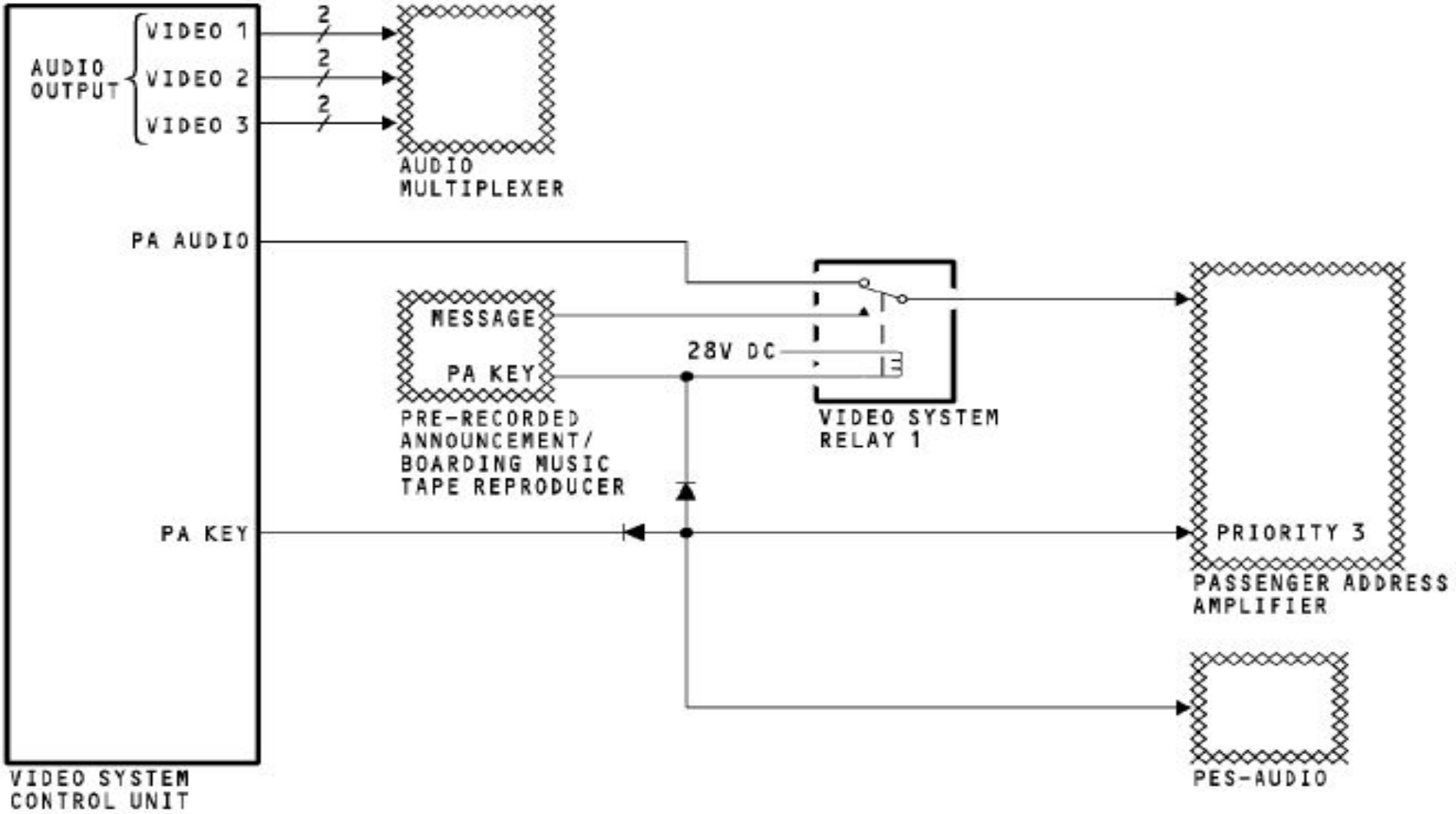
- The PSEU provides these discretes to the VSCU:
- * Nose gear discrete - set when the nose landing gear is down and locked
- * Air/ground discrete - set when the airplane is on the ground
- * Parking brake discrete - set when the parking brake is set and the airplane is on the ground.



PES-VIDEO - VIDEO AND CONTROL INTERFACES - 1

Audio Outputs

- The video system control unit has audio outputs for two kinds of programs, entertainment programs and announcement programs.
- **Entertainment Audio**
- The video system control unit can send audio from three programs to the audio multiplexer for the entertainment of the passengers. The passengers select the program on the passenger control unit which is part of the PES-audio. Each program has two audio outputs. This lets the passengers listen to the programs in more than one language.
- **Announcement Audio**
- The video system control unit sends audio to the passenger address (PA) amplifier for programs which are broadcast to all passengers. The audio goes through the video system relay 1.
- When the announcement plays, the video system control unit sends a discrete signal (PA KEY) to the PA amplifier. The PA amplifier uses this signal to prioritize the audio inputs. The announcement audio has priority 3.
- The PA KEY goes to the PES-audio to stop the audio entertainment player.



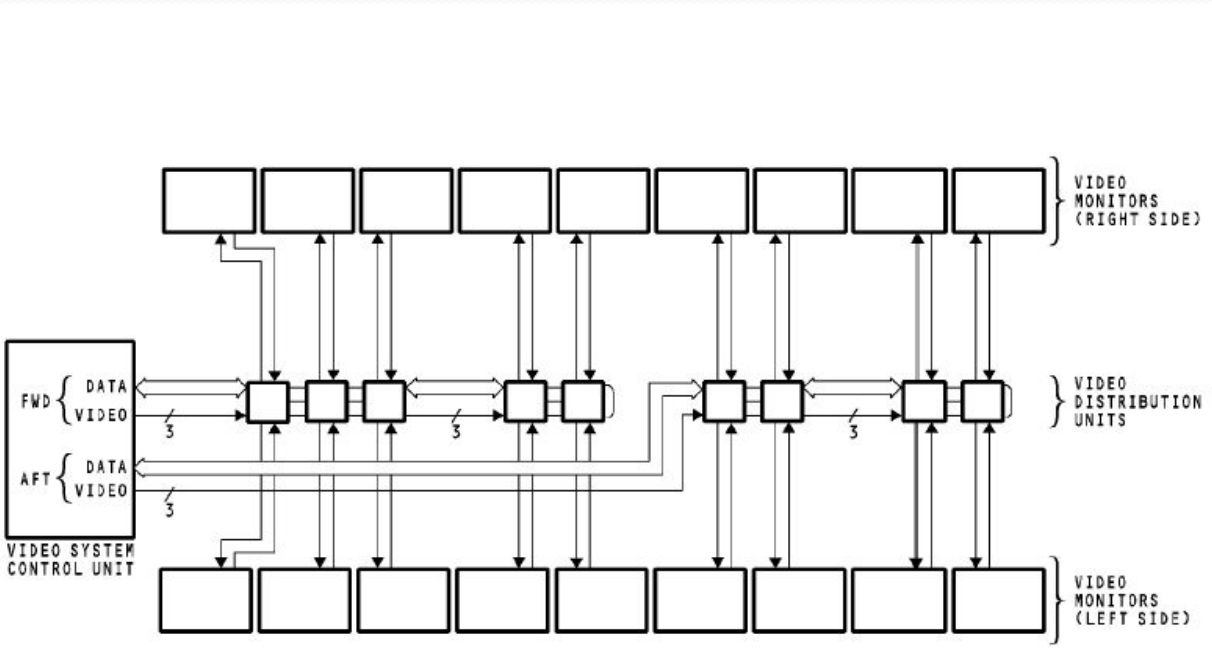
PES-VIDEO - VIDEO AND CONTROL INTERFACES - 2

Video Output

- The video system control unit (VSCU) sends video signals and control signals to the video distribution units (VDUs). The VDUs send video signals to the video monitors.
- The VSCU receives signals to monitor the status of the video monitors.
- **Video**
- The VSCU sends three video signals to the first VDU in the forward and aft sections. The VDU sends the video signals on to the next VDU in the section.
- The last VDU in the section has a termination plug. The termination plug provides a 50-ohm termination for each video signal.
- Each VDU sends one of the three video signals to the video monitors.
- **Control**
- The VSCU sends control signals to the VDUs in the forward and aft sections. The data goes to the first VDU in the section. The VDU sends the data to the next VDU in the section.
- The VSCU and VDUs use bi-directional data buses for data transfer.
- The control signals tell the VDU when to apply power to the video monitors. The control signals also tell the VDU which one of the three video signals to send to the video monitors.

Status

- The video monitors tell the VDUs when the video monitor is on.
- The VDUs send the status of the video monitors to the VSCU.



- **General**

- The digital interface unit (DIU) receives commands to control the operation of airshow.
- The DIU receives airplane flight information from other systems.
- The DIU sends video signals to the video system control unit.

- **Control**
- The video system control unit (VSCU) sends commands to the DIU. The DIU and VSCU communicate with each other with the RS485 data bus.

Airplane Flight Information

- The DIU receives airplane flight information from the air data inertial reference unit and the flight management computer.
- The left air data inertial reference unit sends information to the DIU on two buses. The air data inlcudes information such as airspeed, altitude, and temperature. The inertial data includes information such as airplane heading and ground speed.
- The flight management computer (FMC) sends information such as present position.
- FMC 1 or 2 sends information through the FMCS transfer relay to the DIU. When you select BOTH ON L or NORM on the FMC source select switch, the DIU receives information from FMC 1.
- When you select BOTH ON R on the FMC source select switch, the DIU receives information from FMC 2.

Video Output

- The DIU sends a video signal to the video system control unit (VSCU). The VSCU uses the video signal to display flight information to the passengers.
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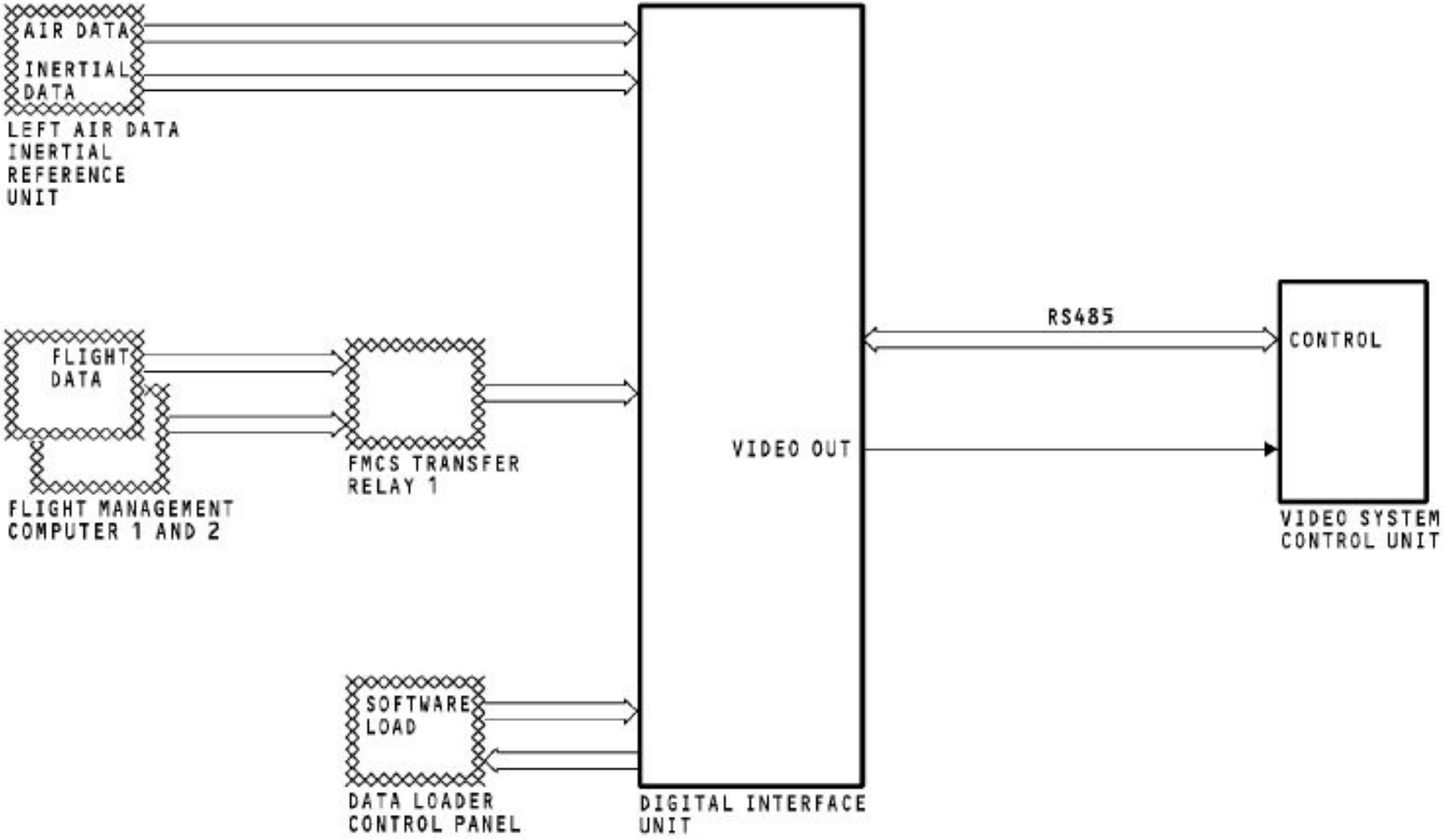
Software Load

- The DIU receives software updates on the airplane. The DIU communicates with the data loader through the data loader control panel.



PES-VIDEO - VIDEO AND CONTROL INTERFACES - 4