

2.26 PAYLOAD AND GENERAL SUPPORT COMPUTER

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Description

The payload and general support computer (PGSC) is a laptop portable computer used either as a standalone computer or as a terminal device for communicating with other electronic systems. The PGSC is one element of the command and data services provided by the Space Shuttle Program (SSP). These computers are used in many different activities.

Experiments

PGSCs are used in the middeck or flight deck to interface with flight-specific experiments that may be located in the cabin or payload bay. The PGSCs are used to monitor experiment data and/or issue commands to payloads or experiments in the payload bay.

Orbiter Communications Adapter

The orbiter communications adapter (OCA) is a card that is installed in the expansion tray to provide an interface to either the orbiter S-band PM system or the Ku-band system. While in the S-band mode, the OCA acts as a modem and allows electronic file transfers via one of the air-to-ground (A/G) audio loops, usually A/G 2 through the payload specialist (PS) audio panel. The A/G 2 loop provides a bandwidth of 32 kbps. The Ku-band system is capable of using a bandwidth of 128 kbps, in addition to one A/G loop for uplinks, thus enabling a higher data rate transfer. In the Ku mode, the downlink bandwidth could be in either 2 or 4 Mbps. Electronic file transfers include personal mail to individual crewmembers; Flight Data File (FDF) procedures; drawings; whiteboard, which is a real-time system of displaying what a person in MCC is sketching on a board; and video conferencing, which provides real-time video to and from MCC and displays the video on the PGSC screen.

Spacelab

With Spacelab module missions, PGSCs are used to interface with the Spacelab computer systems and experiments performed in the Spacelab module.

Spacehab

Similar to Spacelab, PGSCs in the Spacehab provide an interface to Spacehab systems data and to experiments in Spacehab.

Rendezvous

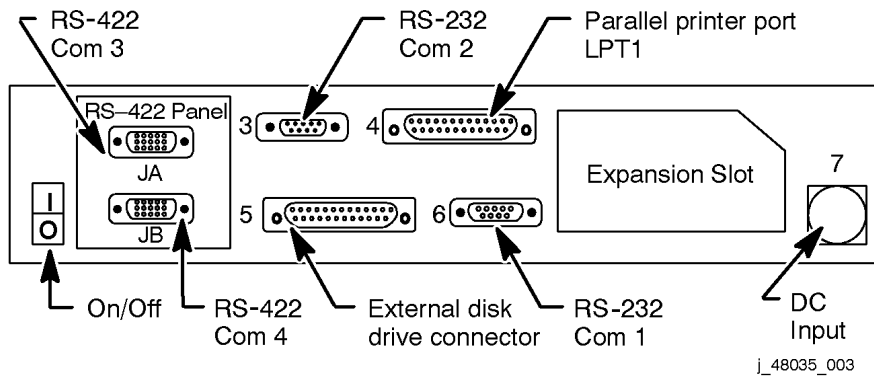
During missions that deploy or rendezvous with a payload or dock with Space Station, PGSCs are used as a tool to facilitate the orbiter's approach to its targets. Other tools used in conjunction with the PGSCs include:

- Handheld laser (HHL)
- Pulse code modulation master unit (PCCMU) data (PCDECOM)
- Rendezvous proximity operations program (RPOP)
- Trajectory control sensor (TCS)
- Tools for rendezvous and docking (TRAD)

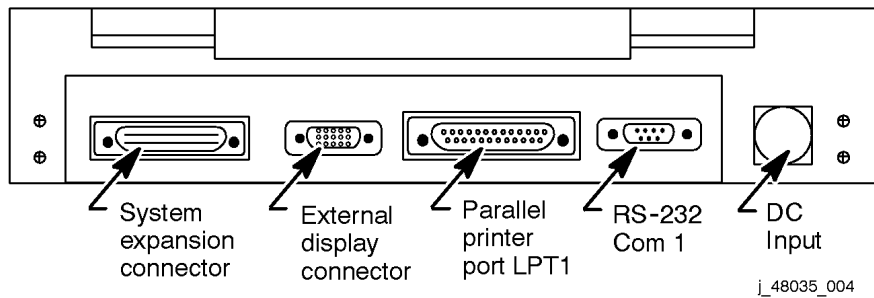
Equipment

Equipment flown to support PGSC activities includes:

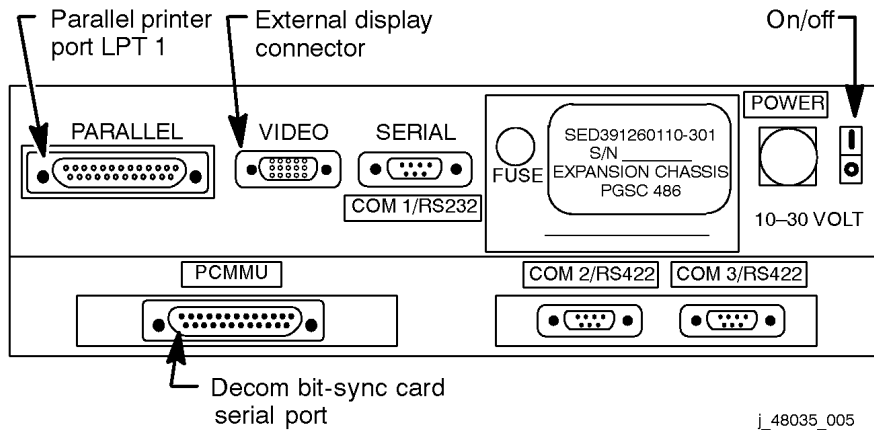
- IBM 755c laptop
- RS-422 and RS-232 Y - cables to interface multiple PGSCs
- PCDECOM cable to interface the orbiter PCMMU data to the PGSC
- RS-422 PDIP cables to interface PGSC with equipment located in the payload bay
- Cables to interface an HHL or TCS to a PGSC
- Expansion tray to provide additional ports to the PCMMU payload bay equipment
- OCA card to interface with orbiter communications systems
- TV tuner to interface orbiter CCTV signals to a PGSC



PGSC (386) – 715; GRID



PGSC (486) – Thinkpad



PGSC (486) – Thinkpad Expansion Chassis

Back of PGSC and Expansion Chassis