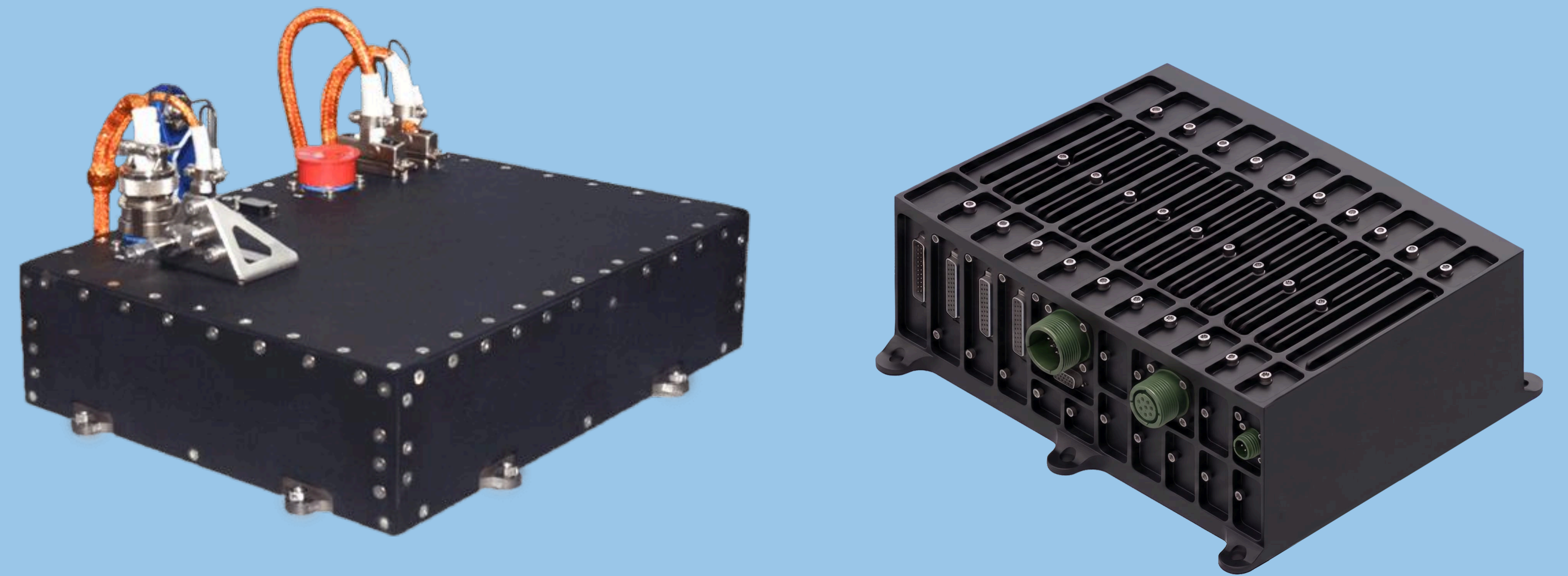
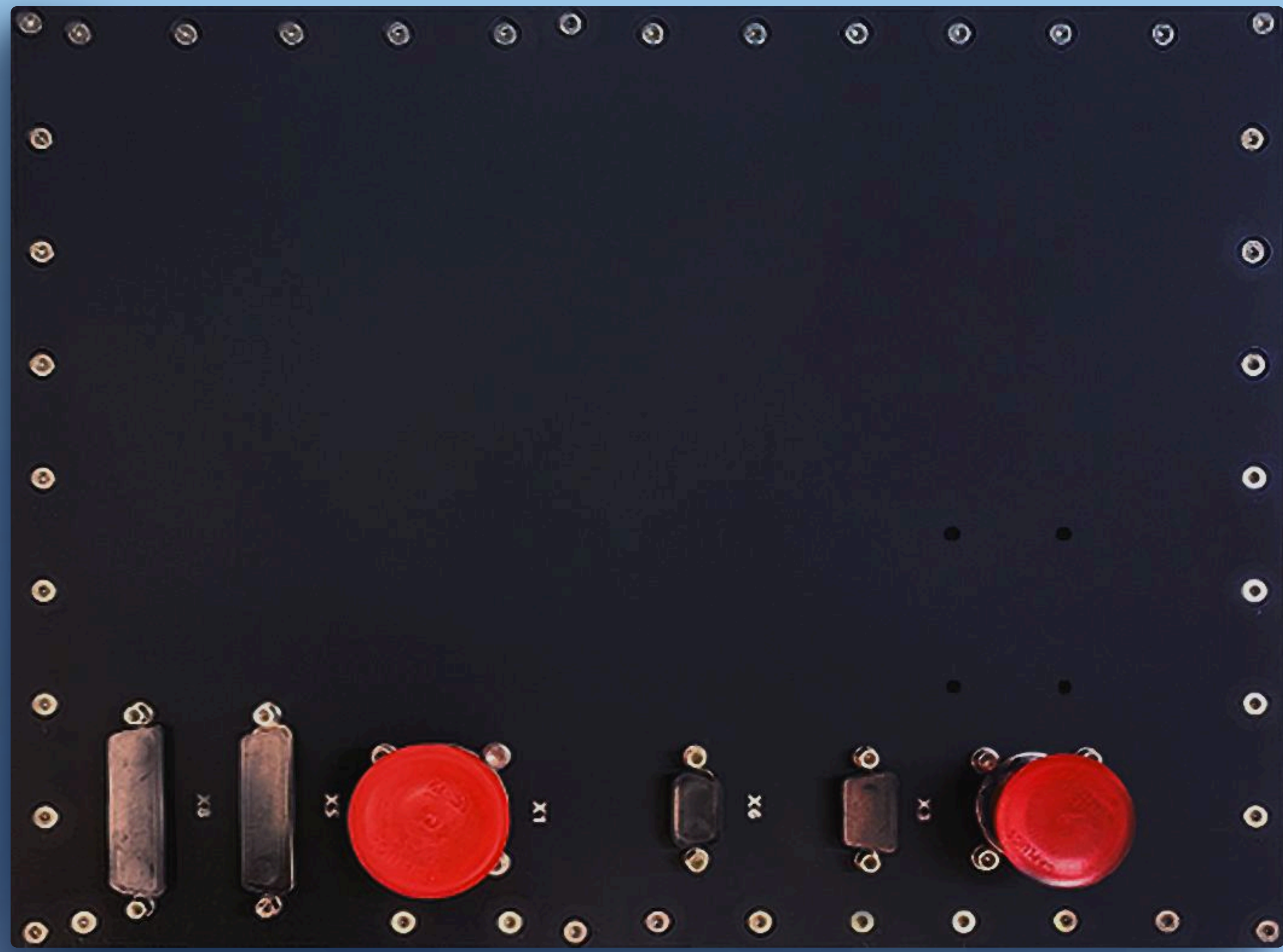


PPU-500 PRODUCT SHEET



The PPU-500 is a power processing unit designed for electric propulsion systems in the 500 W class, providing efficient and reliable power management for Hall-effect thrusters. It has demonstrated successful flight heritage, confirming stable operation and performance in orbit.

The unit is developed as part of the SPS-40 electric propulsion system, which includes the ST-40 Hall thruster and Xenon Feed System (XFS). The PPU-500 consists of three main subsystems: the thruster power module, the XFS power module, and the main controller. The thruster power module converts onboard power into stabilized outputs for the anode and cathodes, while the XFS power module controls low-voltage supplies for sensors, heaters, valves, and measurement circuits associated with xenon flow management.

The main controller executes operating algorithms, manages all power converters and

system measurements, and provides communication with the onboard computer, enabling fully autonomous and reliable system operation.

The PPU-500 is designed with a modular architecture, allowing flexible configuration and simplified assembly tailored to specific mission requirements. Its design also supports the possibility of transitioning to radiation-hardened components without requiring a complete redesign, making it suitable for missions beyond LEO, including MEO, GEO, and deep space applications. The software architecture allows updates and modifications in orbit, providing additional system flexibility.

With an expanded power range and adaptable configuration, the PPU-500 provides a versatile and scalable solution for a wide variety of satellite missions, from constellation platforms to more demanding space environments.

PPU-500 PRODUCT SHEET



FUNCTION BLOCK	ITEM	SPECIFICATION
Inverter	Input Voltage	28V Unregulated (24-36 V)
Communication	Control Interface	CAN/RS-485, Ethernet (optional)
Discharge Power Supply	Type	Power stabilization
	Power, W	Up to 500
	Max Output Voltage, V	Up to 400
	Max Output Current, A	Up to 2.0
Solenoids Power Supplies (Two units)	Type	Current stabilization
	Output Voltage, V	Up to 12
	Output Voltage, A	Up to 1,5
Cathode heater power supply	Type	Current stabilization
	Output Voltage, V	Up to 12
	Output Voltage, A	Up to 9.0
Cathode Keeper Power Supplies	Type	Power stabilization
	Max Output Voltage, V	Up to 120
	Output Current, A	Up to 1.5
Xenon Feed System Control Unit	Heater (Xenon)	2 channels (12V (Up to 2 A))
	Solenoid Valve	Up to 8 channels
	Temperature Transducers	Up to 5 channels
	Pressure Transducers	Up to 6 channels
Radiation tolerance (COTS)		Up to 30 kRad
Radiation tolerance (Rad-hard)	Radiation-hardened configuration available based on customer requirements	
¹ TRL		9

1 – TRL-9 is the previous configuration of the PPU-500 launched into orbit in 2022. Based on the obtained experience from multiple systems some modifications have been implemented in the design.