

**CAES** PIONEERING  
ADVANCED  
ELECTRONICS

# Radiation Hardened and High Reliability Solutions



# CAES Enables New Era of Space and Satellite Technology



CAES is a leading developer of mission-critical technologies for commercial, civil, military and intelligence-gathering spacecraft. We helped to pioneer the earliest days of spaceflight and have amassed a storied record of achievement – from the historic Apollo missions to today’s constellation satellites supplying global communications networks, to ambitious new lunar and deep space exploration.

Our mission pedigree is built to withstand the rigors of space and reflects a proven, trusted development partner with a well-earned reputation for reliability, innovation and commitment to hitting the launch window. That’s why CAES solutions continue to enable the world’s leading satellites, manned and robotic spacecraft and ground systems launch vehicles. And it’s why our technology has been designed into everything from life support and propulsion systems to microwave electronics and satellite communications equipment.

## Traditional Space

With nearly a half-century of expertise designing and manufacturing key components, modules and subsystems for space missions, the CAES legacy is unequalled in the industry. From Apollo to Orion, from ISS to the lunar gateway, from Sojourner to Perseverance, from the early commercialization of space to the ultra-high-throughput communications satellites currently being deployed, our innovative approach to technology development has enabled some of history’s most iconic missions.

## New Space

For nearly 20 years, CAES has leveraged our extensive space industry experience to enable New Space applications. Our expertise designing streamlined solutions has helped a new breed of companies to commercialize the space and satellite industry for operation in low earth orbit (LEO) and medium earth orbit (MEO), enabling a new era of wireless communications and earth observation.

For these shorter duration missions and more benign operating environments, CAES has developed new components, modules, subsystems, IP and packaging to meet the performance, power, reliability and budgetary requirements of Constellation and New Space satellites. Our complete line of microprocessors, microcontrollers, memory, and interface integrated circuits (ICs) are significantly more cost-effective than fully qualified RadHard devices yet are built to withstand space environments for much longer than off-the-shelf commercial alternatives.



# Pioneering Technologies for Space Missions

The infographic displays various space missions and the CAES products used in them, set against a background of space with planets and stars. At the bottom, there is a row of CAES product categories: Processing, Memory, Interconnect, Power, and Motion Control, each with a representative image of a CAES component.

- 1992 SAMPEX**
  - Processing
  - Communications
- Space Shuttle Program**
  - Processing, Memory, Interconnect
  - Platform/Propulsion Control
- GPS-2 / Navstar-2**
  - Processing
  - Platform/Propulsion
- Orion**
  - Processing, Memory, Interconnect, Power
  - Communications, Platform/Propulsion Control, Habitat/Environment Control
- Solar Orbiter**
  - Processing, Memory
  - Payload Processing
- Space Suit**
  - Processing
  - Habitat/Environment Control
- International Space Station**
  - Processing, Interconnect
  - Platform/Propulsion Control, Communications
- 2011 Juno**
  - Power
  - Power Conversion and Management
- BepiColombo**
  - Motion Control
  - Communications
- Artemis**
  - Processing, Memory
  - Habitat/Environment Control
- 2024 Artemis**
- Mars Perseverance Rover**
  - Processing, Memory, Motion Control
  - Mission and Payload Processing, Platform/Propulsion Control, Power Management

## CAES Products for Space Applications

- **Antennas**
- **ASICs**
- **Cable Assemblies**
- **Motion Control**
  - Actuators and Mechanisms
  - DC Motors
  - Electronic Controllers
  - Space Flight Gimbals and Controllers
- **Power Devices and Power Conversion**
  - Battery Electronics
  - DC-to-DC Converters
  - Motion and Resolver Control
  - Power Management ICs
- **Precision Positioning Systems**
- **Radiation Hardened Solutions and High Reliability Components**
  - Analog
  - Computing
  - Interconnect
  - IP Cores
  - Logic
  - Memory
  - Power Devices and Power Conversion
  - RF Solutions for Space
  - Single Board Computers
- **RF Assemblies and Subsystems**
- **RF, Microwave and Millimeter Wave Components**
- **Rotary Joints**
- **Waveguides/3D Printed Waveguides**

Our RadHard-by-Design solutions come with a complete set of building blocks to support rapid and affordable implementation for RadHard analog circuit applications on space programs. In addition to our product portfolio, CAES offers a variety of services including 3D Printing/Additive Manufacturing, Advanced Packaging Solutions, Build to Print/Build to Spec, Electronic Manufacturing Solutions, Testing and Tuning, and more.

CAES solutions are found on the world's leading ground systems launch vehicles, satellites, manned and robotic spacecraft, for both traditional and new space applications.



We engineer  
solutions for  
the world's  
most critical  
missions.