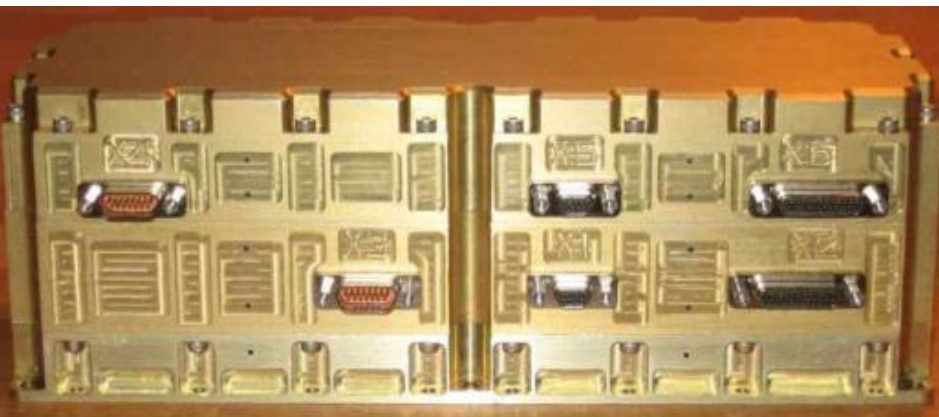


SPACE-RATED ELECTRONICS

Motor Drives & Controls



- Motor power stages
- Digital controllers
- Control of current, velocity, and position
- Support of position feedback devices
- Support of host command interfaces
- Customized software applications
- Full In-house design, analysis, test and qualification by MACCON

MCDE: 2-channel Motor Controller

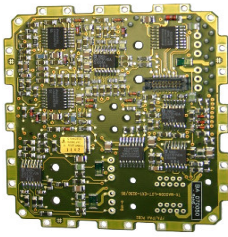
MACCON supplies motor power and control electronics for space programs. These are designed and built to customer specification. However all new designs are based on established technology, which has been successfully implemented on previous space programs – see features and examples below.

Engineering Design & Qualification Services

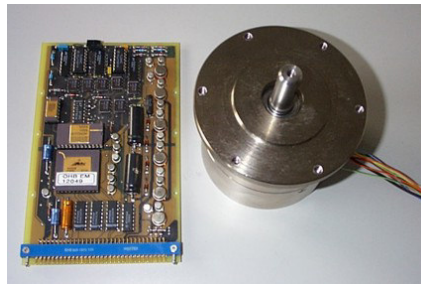
- Circuit design services
- Mechanical housing design
- Software and firmware design
- FPGA design
- Servo-system analysis & simulation
- Design analyses:
 - Reliability incl. parts count, parts stress, and FMEA
 - Interface
 - Mechanical
 - Thermal.
- In-house qualification:
 - Temperature and vacuum
 - Shock and vibration
 - EMC etc.

Important characteristics

- Design and manufacture to ESA standards
- Extensive control and interface functions possible
- Designs to minimize mass and energy requirements
- Redundancy by duplication of motor, feedback, control and power channels
- Operating voltages typically 3.3 to 28 V



LCT - FPA/PAA Controller



Electronics and motor for BIOLAB



LCT - CPA-Controller

BIOLAB Centrifuge Control

This unit drives a centrifuge motor, which is used to simulate micro-gravity (<1g) on the Columbus and ISS space stations. This system is used for scientific research into the properties of materials and physical processes under conditions of low gravity; only in space can these conditions be maintained over a long period.

Features:

- Drive stage for DC torque motor
- Control current and velocity
- Operating voltage 24 V DC
- Peak current 2 A
- Linear output stages with high bandwidth current control
- Digital command analog, +/-10V
- Velocity feedback DC tachometer
- Encoder feedback SSI (for monitoring purposes)
- Supplies +24V, +5V

Motor Control & Drive Electronics Box (MCDE)

The MCDE drives the scanner motor of the Microwave-humidity sounder (MHS). This high-performance digital and analog motor controller provides many control and monitoring features.

The MHS is a multi-channel microwave radiometer operating in the 89 to 190 GHz band, providing information on atmospheric water vapor. MHS flies on the Chinese FY-3A polar orbit mission.

Features:

- Drive stages for 3 phase PMDC-brushless motor, two-channel
- Control current, velocity and position, autonomous scan trajectory generation
- Scan cycle 2.7 secs.
- Operating voltage 27 V DC
- Peak phase current 2 A
- Linear output stages with high bandwidth current control, redundant
- Digital command SpaceWire (serial data link), redundant
- Encoder feedback 16 Bit/rev. SSI serial transmission, redundant
- Radiation > 20 k/rad
- Mass < 650 g
- Supplies +27 V, +12 V, +5 V, redundant