

escMDE - Multipurpose Drive Electronics for Mechanism Manipulators

The Multipurpose Drive Electronics (MDE) is designed to drive up to four stepper motors used in the satellites' on-board applications.



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KEY FEATURES

- Four motor driver outputs (4xN/4xR)
- Fully redundant design
- Redundant communication interfaces
- Full stepping
- Voltage mode outputs
- Over-current protection on each output
- Flexible configuration via NVM
- End position control: step counting, end-switch activation, angular position setpoint

INTERFACES

- Communication: redundant RS-422
- Primary power bus: +28 V (unregulated)
- External thermistors (motor monitoring)
- Coarse and fine potentiometers for each motor actuator
- Micro-switches (NC+NO)

ENVIRONMENT

- Size: 180 x 180 x 136 mm
- Mass: 4.3 kg
- Operating temperature: -20 °C to +40 °C
- Non-operating temp.: -25 °C to +55 °C
- Cold start: -30 °C
- Radiation: TID typ. 50 kRad (Si)

PERFORMANCE

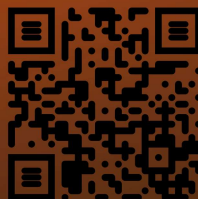
- Start-up time: < 2 sec
- Housekeeping rate: up to 10 Hz
- Motor drive voltage: 28.5 V
- Max. motor current: 0.7 A (configurable)
- Motor speed: 0-500 full-steps per sec.
- Thermistor accuracy: ± 1.5 °C in range -40 ° to +110 °C
- Potentiometer accuracy: $\pm 0.3\%$ of full-scale
- Standby power consumption: < 9 W

PROTECTIONS

- Motor over-current protection
- Relay on each motor output
- Power supply under-voltage, over-voltage and over-current protections

POSSIBLE APPLICATIONS

- Antenna Pointing Mechanisms
- Deployable Sunshield Assembly Structure
- Solar Array Drive Electronics
- Propulsion Pointing Drivers
- Instrument Pointing Devices
- Pointing or Scanning Systems
- Mechanism manipulator



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esc Aerospace as product neutral systems integrator and HW/SW product developer with a focus on Space and Defence offers: Mission Critical Software; Multipurpose Drive Electronics; On-Board Systems: DPU with subsystems MMU, PCDU, RTU, SDR; Space qualified On-board Computer (OBC, OBDH); Secure Communication: SATCOM, QKD; True Random Generator; Payloads: Hyperspectral Cameras, Lidars, Ionizing Radiation Detectors Space Pix; EGSEs/SCOE; Avionics for Unmanned Systems.