

Software Defined Drive Electronics (CODE+)

Our compact stepper motor driver, designed to operate different types of mechanisms providing advanced features such as micro-stepping and on-board signal processing.

Overview

The CODE+ is a **compact, modular, high-reliable two-axes stepper motor controller** capable of operating various types of mechanisms such as antennas, solar arrays or thrusters.

Each module provides **2 independent motor channels** that can be individually configured as **two- or three-phase drivers**. Up to **3 sensors per motor** are processed on-board or routed-through. Each sensor can be configured either as digital (switch) or analog input (thermistor, potentiometer). Additional **2 feed-through** lines are provided per motor, which can be used for functions not supported on-board such as heater control or encoder processing.

Each motor interface is located on a separate connector. To increase the channel capacity, up to 4 modules may be stacked vertically. Optional extension modules can be offered for e.g. multiplexing or MIL-STD-1553B interfacing.

The CODE+ operates from an **unregulated 28 V** primary power bus and is controlled via a **dual UART** interface applying **CCSDS** packets. The unit is operated from a rad-tolerant microcontroller. The software is **category B** (ECSS-E-ST-40C) and supports **in-orbit patching**.

Features

- Two-phase motor operation with up to 64 micro-steps
- Three-phase motor operation in full-step mode
- Auto-Start function or On/Off High-Power-Command
- Go to Target operation (absolute / relative)
- Constant Speed drive
- Acceleration limited speed profiles
- End-switch stop, step-loss control

Interfaces

- Primary power bus: 22 V to 38 V
- Discrete TM: Unit health status, unit temperature
- Dual-UART interface, RS-422 type
- 3 sensor signals processed per motor (or fed through)
- 2 feed-through lines per motor (100 V compliant)
- 1 connector per motor (DEM15S)
- 1 common control connector (DAM26P)
- 1 power & discrete control connector (DEM9P)

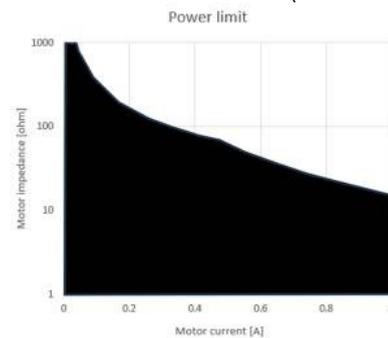
Product availability: Please contact our Sales team.

Beyond Gravity

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Performance

- Start-up time: <500 ms
- Motor drive voltage: max. 32 V
- Motor current: max. 1 A
- Stepping rate: max. 1000 steps/s
- Standby power consumption: < 3 W
- Motor driver efficiency: >75%
- Failure rate: <350 FIT (Class 1 parts)



Protection

- Secondary supply short-circuit protection
- Over-current protection of motor driver
- FDIR based on sensor data
- Compatible to LCL-protected power bus

Physical / Environment

- Size: 200 x 125 x 31 mm³
- Weight: < 0.8 kg
- Operating temperature: -30°C to +65°C (qual)
- Non-operating temperature: -40°C to +75°C (qual)
- Minimum switch-on temperature: -30°C
- Fundamental Frequency > 550 Hz
- Random vibration 18.4gRMS
- Radiation: up to 50 kRad (Si), unit provides 2mm eq. aluminum shielding
- Passive cooling of the entire unit
- Optional black Kapton tape on top for emissivity reduction

Extensibility

- Software patching while in-orbit
- Extension modules for motor multiplexing on request