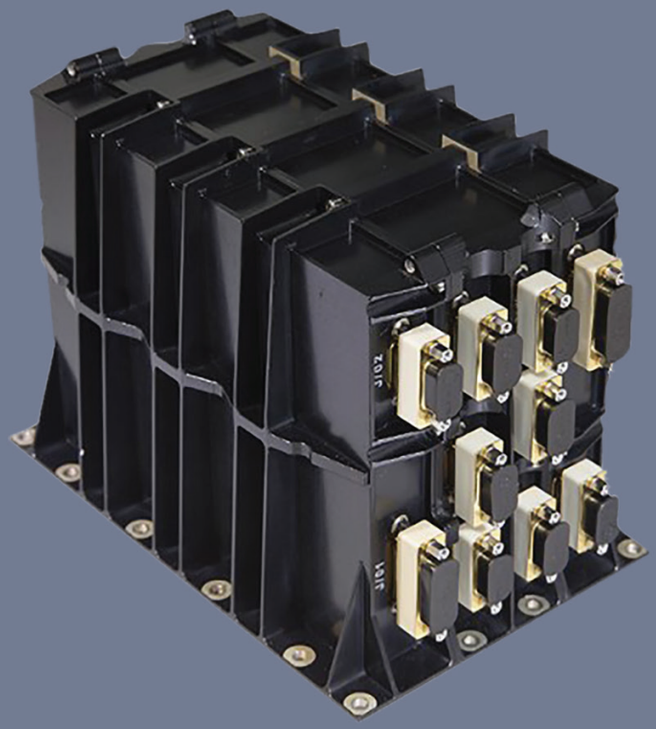
ELEKTRA



KONGSBERG

KONGSBERG ELEKTRA

Electronics for Kongsberg Technology of Rotating Assemblies

ELEKTRA is a fully integrated two axis drive electronics developed by KDA to command the angular speed and position based on commands from the Spacecraft, and acquire angular position from a potentiometer.

ELEKTRA can drive two 2- phase stepper motors simultaneously and independently. Power, position, speed, acceleration and step-mode (micro-step, full-step) are configurable via telecommands.

ELEKTRA has full redundancy; the redundant controller is operating in cold redundancy. Nominal and redundant controller drive separate windings of the same stepper motor.

Operational commands and telemetry are provided through the MIL-STD-1553B communication bus. Additional interfaces include redundant High Level TM for ON/OFF control, RSA interfaces for status telemetry and redundant thermistors for temperature monitoring. Temperature monitoring at the ELEKTRA TRP can be performed regardless of the state of the ELEKTRA.

ELEKTRA can operate on any unregulated power bus from 20V to 40V (LCL Class 1). Speed and accelerations can be set with high accuracy, especially in low speed/acceleration region. This assures that low forces are induced on the spacecraft even by the rotation of large solar arrays.

FEATURES

- Constant power control
- Full Cold Redundancy
- Full protection against over-voltage, under-voltage and short circuit
- Configurable Power/Speed/Acceleration
- Full step to 128 micro step
- High resolution speed command
- High resolution position readout
- Mechanical end stop switch acquisition
- Programmable acceleration
- Low EMC emissions
- FDIR/Housekeeping

ELEKTRA FG

ELEKTRA FG has flight heritage on the following missions: Sentinel-1 A/B and Solar Orbiter. ELEKTRA FG is contracted for the following missions: Sentinel-1 C/D, MetOp-SG, JUICE, Copernicus Co2M, MSR-ERO, Space Rider, Copernicus CHIME and Copernicus LSTM.

ELEKTRA TECHNICAL DATA

Mechanism interface	
Motor compatibility	2-Phase Stepper Motor
Motor drive	Constant power
Motor voltage	28V maximum
Step resolution	Up to 128 micro step
Speed and acceleration resolution	22-bit
Position reading resolution	14-bit
End-stop switch	NO or NC mechanical switch
Thermistor	10kOhm
Electrical	
Power Bus	20V to 40V regulated or unregulated
Power Class	LCL Class 1
Maximum operational power consumption	8.5 Watts
Maximum stand-by power consumption	4.9 Watts
Interfaces	
Communication	MIL-STD-1553B
On/Off Command	High Level 26V
On/Off status	Relay contact (RSA)
Temperature Monitoring	Redundant Thermistors, 10kOhm
Environment	
Non-Operational qualification temperatures	-50 °C to 80 °C
Operational qualification temperatures	-30 °C to 70 °C
Random vibration levels	IP 12.8, OP 26.3 [g RMS]
Shock	SRS 2000 g at 1500 Hz
Mass	2.89 kg
Dimensions	
Length	215 mm
Width	140 mm
Height	160 mm

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