KARMA-5 TG

KONGSBERG

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KARMA-5 TG Solar Array Drive Mechanism

KARMA-5 TG (Third Generation) is the latest development of the KARMA-5 family Solar Array Drive Mechanisms (SADMs). KARMA-5 TG is a price and lead time competitive modular and configurable SADM able to be fitted with a Slip Ring or a Twist Capsule for transfer of power and signals.

A major innovation is the use of a modular PCB based Slip Ring providing a compact design and it enables KARMA-5 TG to cover a wide power range.

With two modules the power rating for the Planetary SR are;

- Current rating per track 8,85 A
- Total forward current capacity of 320 A
- 18 power tracks per module (max 4)
- 10 power tracks per module (max 4)
- 24 Signal lines.

KARMA-5 can be configured with one, two, three, or four Slip Ring modules depending on power requirements.
KARMA-5 TG is using the Kongsberg qualified EuroKARMA drive-line.

The KARMA-5 SADM complies to requirements by virtue of 4 main functions:

1. Retain solar array; keep S/A attached to the S/C and react forces resulting in launch and in orbit manoeuvres.
2. Point the S/A in desired direction with stepper motor power interface .
3. Transfer power and signals from S/A rotating reference frame, to S/C stationary reference frame.
4. Redundant position feedback by high accuracy potentiometers.

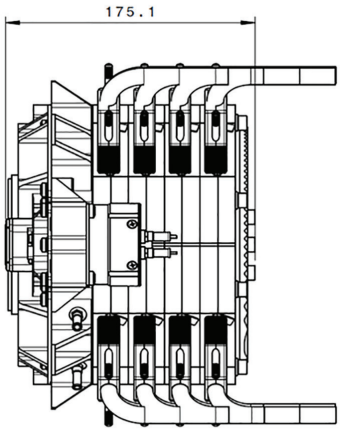
FEATURES

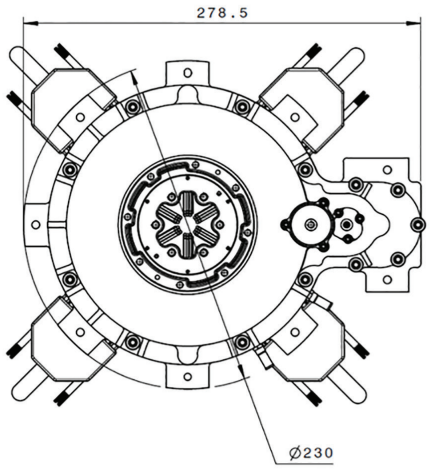
General

- Long life for LEO
- GEO applications
- Low mass
- All European components
- Accurate position feedback

Slip-ring configuration

- Continuous rotation
- High power capability 8-9 kW





KARMA-5 TG TECHNICAL DATA

Mechanism	
Motor type	Redundant two phase bipolar stepper
Rotational speed capability	1°/s
Full step resolution	0.005°
Operational life	15 years
Qualification revolutions	125.000 of output shaft
Power requirement, nominal	5 W
Position feedback	Potentiometer (linearity +/-0,05% FS)
Slip-ring performance (Per Module, max 4)	
Power tracks	18 @ 8,85 A
Signal tracks	10 @ 1 A
Ground tracks	2
Total forward current capacity	80 A
Qualification temperatures	
Non-operational	-50 °C to +85 °C
Operational	-30 °C to +75 °C
Mass	
Depending on configuration	4,6 to 7,9 kg
Qualification loads	
Axial	1800 N
Radial	2000 N
Cross axis moment	300 Nm
Dimensions	
Length	< 142 mm (105 mm from interface plane inside satellite)
Diameter	< 230 mm

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