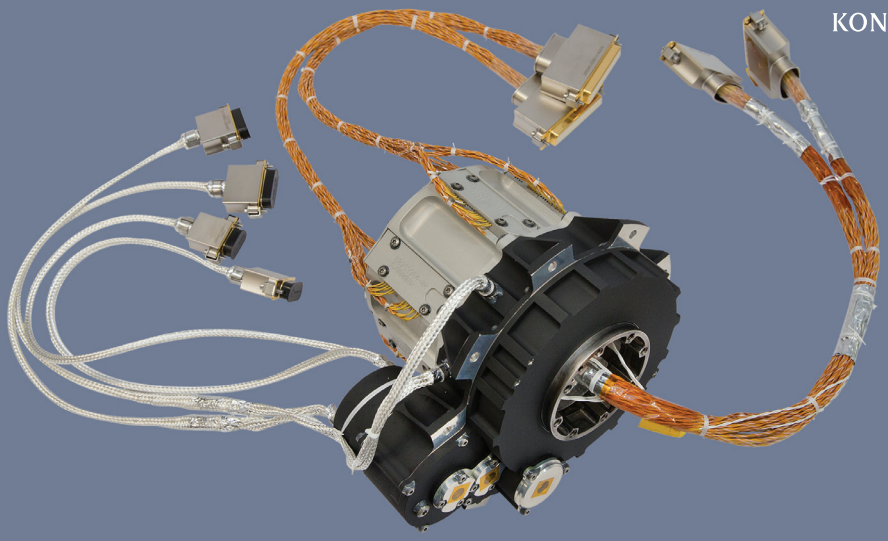
KARMA-4 TG

KONGSBERG



KONGSBERG KARMA-4 TG

KARMA-4 TG Solar Array Drive Mechanism

KARMA-4 Third Generation (TG) is the latest development of the KARMA-4 series of Solar Array Drive Mechanisms (SADMs) based on two generation SADM with flight heritage.

KARMA-4 TG is a compact price and lead time competitive modular and configurable SADM aimed at both LEO and GEO applications. Depending on customer needs, it can be delivered with a Slip Ring or a Twist Capsule for transfer of power and signals.

Major innovations are updated drive-line giving increased life and low level of micro-vibration, new Slip Ring technology to increase power transfer, and a new Twist Capsule to further reduce cost and flexibility. The new Slip Ring enable increased current and has a shorter length, reduced diameter and mass.

The KARMA-4 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

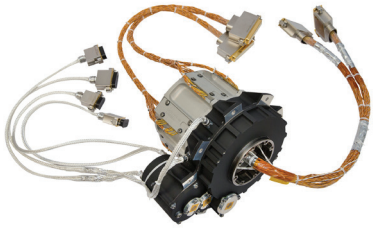
- Long life for LEO and GEO applications
- All European components
- Configurable with different transfer units
- Accurate position feedback

Twist-capsule configuration

- Limited ±177.5° rotation
- Flexible end stop location
- Optional end stop proximity feedback

KARMA-4 TG drive line

KARMA-4 TG Twist Capsules



KARMA-4 TG with Twist Capsule

KARMA-4TG 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	125000 of output shaft
Power requirements, nominal	5 W
Position feedback	Potentiometer (linearity +/-0,05% FS)

Twist-Capsule capacity	**Small**	**Medium**	**Large**
Tracks (multi-purpose lines)	84 @ 1.5A	132 @ 1.35A	216 @ 1.2A

Qualification temperatures

Non-operational	-50 °C to +85 °C
Operational	-30 °C to +75°C

Mass

Depending on configuration	3.8 kg to 4.5kg

Qualification loads

Axial	1800 N
Radial	2000 N
Cross axis moment	300 Nm

Dimensions

Length	< 200 mm (150 mm from interface plane inside satellite)
Diameter	< 200 mm

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