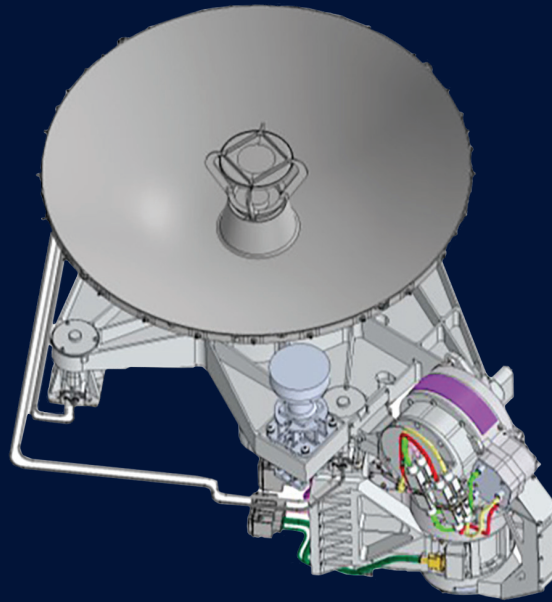


KARMA-8 FG



KONGSBERG



KONGSBERG KARMA-8 FG

KARMA-8 FG Antenna Pointing Mechanism

The KARMA-8 FG is a state-of-the-art Antenna Pointing System that consists of three main sub-systems:

- Bi-axial Antenna Pointing Mechanism elevation over azimuth
- Ka-band High Gain Antenna incl. polarizer (RHCP), RF feed through by wave-guides and Rotary-Joints.
- X-band High Medium Antenna (horn type) with polarizer (RHCP), RF feed through by flexible coaxial cable.

The KARMA-8 will satisfy needs for future science missions, where the PLATO mission is the first.

The mechanism builds on the heritage from KARMA-7 First Generation (FG) with new driveline components giving back-lash free pointing with high accuracy.

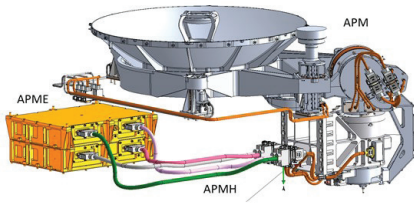
Significant development has already been performed through national funding including de-risk through a CTP contract bringing all critical subsystems to TRL 5 and higher.

The Qualification Model is under manufacture. Delivery of the Flight Model is scheduled end 2023.

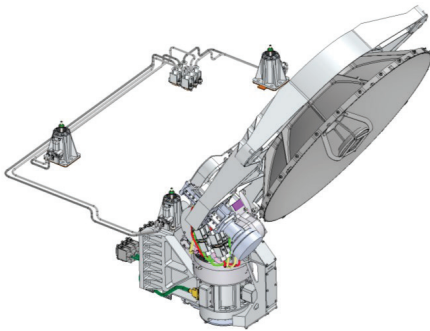
FEATURES

General

- High pointing accuracy
- Dual band Ka HGA, and X MGA
- High TX power capacity
- Low insertion loss
- Low mass
- Sub hemispherical coverage



Complete system with drive electronics and harness



Antenna in pointing position after release by 3 x HDRMs

KARMA-8 FG TECHNICAL DATA

Mechanism

Motor type	Redundant Bipolar Stepper
Rotational speed capability	0.5 °/s
Operational life	8.5 years
Cycles life	> 6 000 Cycles
Power requirements	Typically 17 W (depending on speed)
Position feedback	Redundant Potentiometer

RF characteristics Ka-band High Gain

	Payload science data downlink
Frequency	25.5 – 27 GHz
Antenna diameter	570 mm
System Gain	38.95 dBi at EOC 0.57°
Insertion loss	< 1 dB
Power capability	60 W
Polarisation	LHCP or RHCP
Interface with spacecraft	WR32 or WR42

RF characteristics X-band Medium Gain

	TT&C communication
Frequency	7.19 to 8.5 MHz
System Gain	> 12.5 dBi at EOC 12.3°
Return Loss	> 27 dB
Power capability	12 W
Polarisation	LHCP or RHCP

Mass

22.5 kg

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