jenaoptronik

ASTRO CL star tracker

The rad-hard **ASTRO CL star tracker** from Jena-Optronik has been developed to meet the specific requirements for the New Space economy in terms of cost, high volume production and performance.

The experience in autonomous star trackers from ASTRO 1 in 1989, ASTRO 15 till ASTRO APS is incorporated in the hardware and software design.

All applied parts from EEE to optics materials are consequently radiation hard.

Latch-up free by design.

EEE-parts level commercial to high-rel as customer option.

For constellation programs up to 18 years life time (high-reliabilty parts).

ASTRO CL Star Tracker Performance

Parameter	Value
EEE-parts:	≥ 50krad, SEL ≥ 62.5 MeVcm²/mg latch-up free, no SEB
	commercial grade up to high-rel as customerchoices available depending on (life time & reliability) option, all from high-rel requirements
Design life:	10 years ≤ 1200km orbit, commercial grade parts
	18 years geo-synchronous orbit, high-rel parts
Accuracy:	Bias error: < 0.1 deg (<25 arcsec with dedicated alignment tool)
	Attitude: < 6/35 arcsec xy/z 3σ, @< 0.1deg/sec (BoL)
Lost in Space:	400ms at 5Hz up to 3deg/sec
Sun/Earth exclusion angle:	32deg / 30deg half-cone
Update / Angular rate:	up to 8Hz acquisition & star tracking
	≤ 1deg/sec 100% acquisition & tracking
	< 3deg/sec 80% acquisition & tracking
Power consumption:	< 1W at 3.5 ... $5V_{DC}$
Mass / Envelope:	≤ 300g, 60 x 60 x 175 mm
Software:	Libraries: SpW decoder, mode control, acquisition, tracking, star catalogue
	Can be compiled to any on board computer
Temperature range:	Operational: -30 ... +50°C
	Non-operational: -40 ... +70°C
Interfaces:	Mechanical: 4 x M4 to flat spacecraft plane
	TM/TC: SpaceWire
	Software: Libraries

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