Cryo Drive Electronics Unit (CDEU) for Pulse Tube Cryo Cooler

U R Rao Satellite Centre (URSC) of Indian Space Research Organisation (ISRO) has developed Cryo Drive Electronics Unit for pulse tube cryo cooler (PTC).

Developed dual output electronic sinusoidal AC drive having programmability on the parameters like Frequency, Output voltage, Phase control between dual drive output, soft start and stop during output voltage ramp up and down etc. System has instrumentation to measure parameters like cryo-temperature of cold tip, pressure of the tube, current drawn etc. with built in overcurrent protection.

Cryo Drive Electronics Unit

Salient Features

- PTCs are employed for cooling high sensitive detectors to improve the device's SNR.
- The compressors of PTC are linear motor and require electrical drive signal which is sinusoidal in nature.
- CDEU provides the necessary electrical power drive for motor and instrumentation for the temperature control.

Major Specifications

Bus voltage	70 V DC Bus	
Output specs	Voltage	0-27 Vrms for each compressor
	Power	27W per compressor
	Frequency	40-60 Hz (variation in steps of 1.0 Hz)
THD	<2.5%	
DC Bias	+2.5 V to -2.5 V (Independent setting for both the compressors)	
Monitoring parameters	1. Compressor pressure(bar),Operating frequency,Hz 2. Vrms, Irms of each compressor 3. Cryo tip Temperature in Kelvin 4. Heater Load control and monitoring	
Protection	Over voltage / Current protection	
Special features	Soft start & stop and Launch lock for pistons during launch phase	

Technology Transfer

URSC/ISRO offers to transfer this technology of Cryo Drive Electronics Unit for pulse tube cryo cooler (PTC) developed by URSC to industries in India with adequate experience and facilities. Industries interested in obtaining knowhow may write giving details of their present activities, infrastructure and facilities.

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