

Detection Chain Electronics

Detection Chain Electronics from Jena-Optronik include the electro-optical conversion from the image sensor itself up to the pre-processed image data ready for storage

The electronic components of the Detection Chain by Jena-Optronik GmbH include the development of state-of-the-art image sensors for the image data acquisition itself and their pre-processing and preparation via the front-end electronics and data processing electronics.

The individual components provide the following functionality:

- Provide telemetry data as discrete signals to monitor the sensor and sensor-related electronics
- Support of the in satellite commonly used data bus Systems
- The commanding of the electronic components by discrete Signals
- Clock and synchronization signals for image acquisition and Transmission
- Signal adaptation and low-noise digital conversion of analogue video inputs with high-Resolution
- Real-time image pre-processing and data compression with configurable Parameters
- Data formatting and transfer to satellite storage including additional telemetry data
- Control and power supply of all components including the detectors
- Temperature Control
- TM/TC handling for control and commanding
- Compact design and thus weight-optimized design using sequencer FPGA with a high pin count based on CCGA package

Focal Plane Assemblies (FPA), Front End Electronics (FEE), Scanner and actuator control electronics, Image processing

Motor-Control-Electronics (Scanner-Electronics)

- Operation of a wide range of rotating mechanisms in different operating conditions
- Precise Mechanism Positioning

- Continuous and discontinuous scans
- Fast mirror scan operation with discontinuous scan profiles
- Speed controlled operation
- Sophisticated mechanics and mechanism protection

Image Pre-processing and Video Compression

- 48 channels analog video input from FEE, signal conditioning and digitizing
- configurable real time image data pre-processing and data compression features
- data packet formatting and high-speed transmission to on-board storage

Thermal Acquisition and Control

- High resolution and long term stable temperature acquisition of 58 thermistors
- Thermal control electronics for instrument (15 thermal zones), configurable control parameters
- Additional acquisition of 17 voltages for monitoring

FEE Video Control and Power Supply

- Command interface and power supply for 8 Front End Electronics (FEE)
- Clock and synchronization signals for image data transmission from FEE to VCU box

Instrument control and monitoring

- discrete and MIL-BUS telemetry functions and housekeeping as required for observability (discrete temperatures, on/off and health status; housekeeping data)
- discrete and MIL-BUS TC functions as required for commandability