

DEDICATED ELECTRONICS FOR HIGH-RESOLUTION TDI IMAGING

Sensor control, real-time acquisition and high-speed payload data handling in one integrated electronics architecture.



TWINSPECTOR MISSION

High-resolution Telescope (HRT) for Earth observation using two satellites for stereo imaging and 3D monitoring of critical infrastructure.

Consortium:

LiveEO · KTO · Reflex Aerospace · EMM



EMM's HRT electronics provide the interface between the CIS125 focal plane and the spacecraft data system. The electronics handle camera configuration, payload control and image acquisition while transferring camera data to the OBC through dual 10 Gigabit Ethernet interface.

FROM SENSOR TO SPACECRAFT DATA

01 SENSOR CONTROL Configuration and control of the CIS125 focal plane • Camera parameter storage • Camera data throughput	02 REAL-TIME ACQUISITION High-throughput image capture and deterministic data handling • Real-time frame grabbing • FPGA-based image pipeline • Optional, image recognition	03 PAYLOAD DATA I/O High-speed transfer of camera data to the spacecraft OBC • 2 × 10 GbE interfaces • Shutter driver • Payload control (e.g. mechanisms, temperature control etc.)
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Contact

Engineering Minds Munich GmbH
Gollierstraße 70
80339 München, Germany

+49 89 2488 790 50
info@em-munich.de

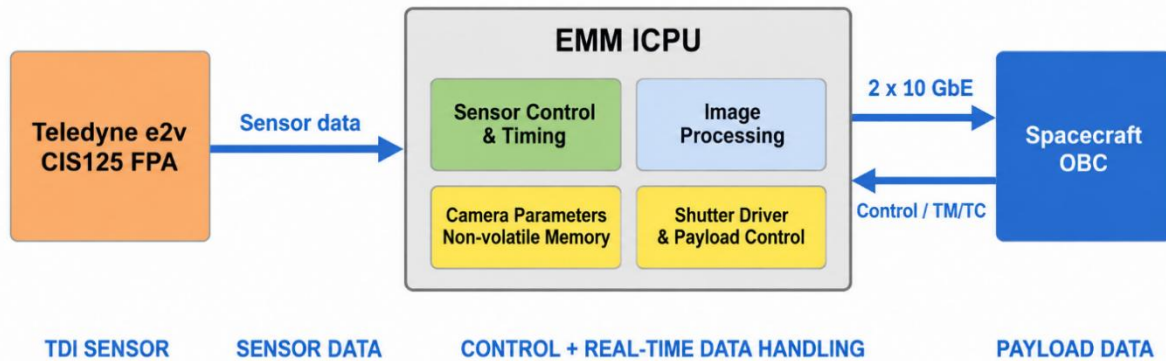
www.em-munich.de

HRT ELECTRONICS ARCHITECTURE

From CIS125 focal plane to spacecraft OBC

TWINSPECTOR ICPU / CIS125 ARCHITECTURE

MISSION-SPECIFIC FRAME GRABBER & CONTROL ELECTRONICS



PROCESSING CHAIN FOR CONTROL & DATA HANDLING

The ICPU combines sensor control and configuration functions with real-time image acquisition and a high-speed data interface to the spacecraft OBC. The focal plane is connected to the ICPU electronics via a flex PCB, providing both power distribution and high-speed data transmission. Camera configuration parameters are stored in non-volatile memory to ensure retention across power cycles.

KEY DIFFERENTIATION

A dedicated electronics architecture tailored to the Teledyne e2v CIS125 and the data-handling demands of high-resolution TDI images.

SYSTEM FUNCTIONS

FPA INTERFACE

Flex PCB between FPA and ICPU
Sensor configuration & timing

FRAME GRABBER

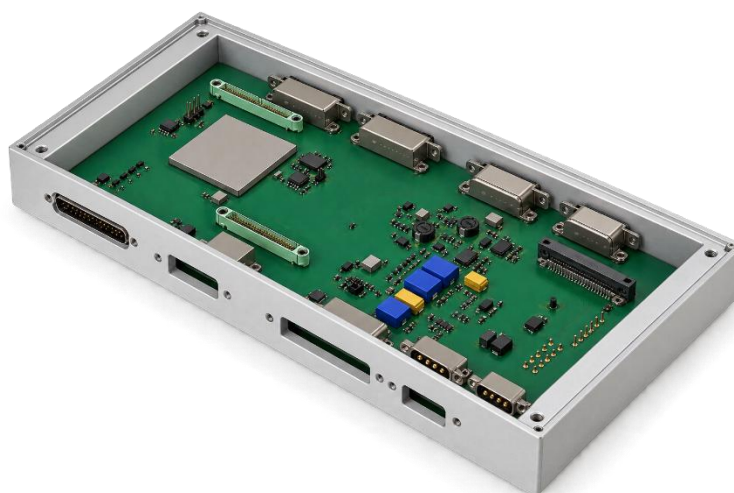
Real-time image acquisition
FPGA-based image/data processing

CAMERA CONTROL

Non-volatile camera parameters

OBC INTERFACE

2 × 10 GbE camera data



CIS-125 image processing module

FROM TDI SENSOR TO MISSION-READY DATA

Control, acquisition and high-speed payload interfacing in a dedicated CIS125 electronics platform.

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