f creotech

Established in 2012 Headquarters in Piaseczno, Poland ~240 employees ~80% R&D

- Certified (automotive, medical, Space) manufacturing services
- Systems for Space, satellites (>25 ESA projects)
- Cameras, drone tracking, EO
- Hardware and systems for Big Science facilities
- Precise time synchronisation systems
- Systems for Quantum Technologies
- R&D, electronics engineering consultancy services

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CREOTECH INTERNATIONAL SPACE PROJECTS – heritage from working with ESA





EXOMARS 2016

- Production of flight electronics for the orbiter of the Exomars-2016 mission
 The flight hardware includes power distribution modules for the CaSSIS camera
- In orbit around Mars since 2016 and still working

PROBA-3

- Development and production of the instrument computer system - coronagraph
- EGSE development and production
- ESA mission planned for 2023 as a new corona observatory

ASIM

- Production of flight electronics for Miniature X-ray and Gamma-ray Sensor
- The electronic modules include the power distribution systems for the instrument
 In the orbit of the ISS since 2018 with Creotech

electronics

JUICE

- Production of electronics for the scientific payload power system
- Staff outsourcing for AIT
 ESA mission JUICE successfully launched in 2023 as a mission to the moons of Jupiter

OPS- SAT

- Development and production of a communication system based on the CCSDS Engine
 Part of ESA's OPS-SAT
- technology satellite
- In LEO orbit since 2019

MET-OP-SG

- Design and production of EGSE equipment
- MET-OP-SG is a constellation of second-generation meteorological satellites
- Same hardware delivered to
 NEOSAT

Hardware and systems for Big Science facilities



- Working with CERN: regular contractor with a framework agreement for electronics engineering services
- Requirements for control and measurement systems and electronics operating in most demanding conditions and applications
- Contribution to the Open Hardware community
- Becoming part of the Big Science ecosystem and supply chain
- Adopting and contributing to the White Rabbit (WR) technology for time synchronization over large distances with sub-nanosecond accuracy and picoseconds precision, transferring White Rabbit to the telecommunications market
- Implementing the MTCA.4 standard
- Contributing to and implementing the DIOT (Distributed I/O Tier) ecosystem
- Current products include the White Rabbit Switch (in standard and low-jitter variants), several WR nodes, several MTCA AMC FMC carrier modules and FMC cards, DIOT Crate, Fan Tray and several electronic modules in this ecosystem



CreoSky 6000 SST sCMMOS camera

- Built-in independent Linux operating system, allowing for stand-alone camera operation
- Initial data post-processing in camera module SoC: frame stacking in FPGA, other predefined data processing algorithms implemented in camera module
- Possibility of implementation of user

defined algorithms on the camera computing resources

Parameters

Sensor	Gpixel Gsense 6060FSI/BSI	Shutter Type:	Electronic Rolling Shutter, with optional external shutter con- trolled from camera
Pixels	6144 × 6144		
Pixel Size	10µm		
Sensor Diagonal	86,9mm	Readout speed	Maximum 22fps for full frame 12bit ERS (can be limited by external interfaces limit), can be increased in case of row skip (windowing)
Chroma	Mono		
QE	71,6%@550nm for FSI, 95%@580nm for BSI		
Full Well Capacity	128ke for FSI, 102ke for BSI	Readout modes	12-bit, 14-bit, HDR
Temporal Noise	4,6e for FSI, 3e for BSI	Sensor cooling	TEC with air by default, can be customized for TEC and water/ glycol coolant
Dynamic Range	Max 89 dB for FSI, 90dB for BSI (12bit HDR)		
Dark current	<0,5e/pix/sec with sensor@ -10°C,	Mass	~5kg without external shutter and adapters
	can be lower when cooled be- low -10°C	Interfaces	10GbE, 1GbE, USB 3.0, Trigger and DIO pins (customizable)



Fig. From top: Creotech's main product in the area of time synchronisation - White Rabbit Switch From bottom: MTCA standard cards used for big science experiments



Figure 6

Fig. CreoSky 6000 SST sCMOS camera by Creotech

