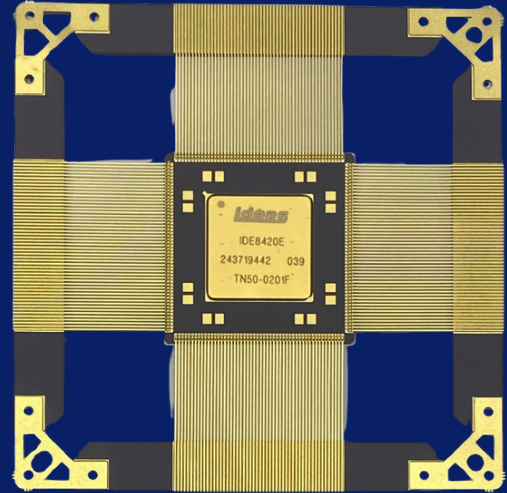


ASIC for Readout and Control of High-Performance Space Image Sensors



Second Generation ASIC for readout from infrared image sensors.

The Near Infrared Read-out Controller ASIC (NIRCA) MkII, developed by Integrated Detector Electronics AS under ESA contract, functions as a control and readout ASIC. Designed for complex analog acquisition of imaging arrays or any suitable read-out integrated circuit (ROIC), NIRCA MkII supplies analog biases to the ROIC and generates fully programmable digital waveforms and ADC sample control. It samples the ROIC's analog outputs and delivers digitized image data to an instrument.

We use the term "readout IC" (ROIC) broadly to refer to any IC that reads out analog data. However, its typical application is an image sensor with a limited digital component.

NIRCA also supports temperature measurement and monitors multiple analog and digital signals. Built for analog acquisition tasks in radiation environments, NIRCA MkII suits both space and terrestrial applications. This integrated circuit system-on-chip controls and collects data from large-area hybrid imaging focal plane arrays (FPA), optimizing performance for high-speed, large-area focal plane applications in MCT or InSb-based Earth observation and security systems.

DEVELOPMENT KIT AVAILABLE.



RADIATION HARDNESS

- Tested for Single Event Effects and Total Ionizing Dose.
- No drift on electrical parameters up to 75 krad(Si).
- Good SEU/SET tolerance on sequencer, registers, ADCs.
- Latch-up immune to 70 MeVcm²/mg.



SWaPC

NIRCA MkII aims at reducing the size, weight, power and cost of infrared sensor readout systems by integrating all necessary functions and performance on a single ASIC. Reducing size, weight and power by offering a single chip solution, without compromising the performance.



QUALIFICATIONS

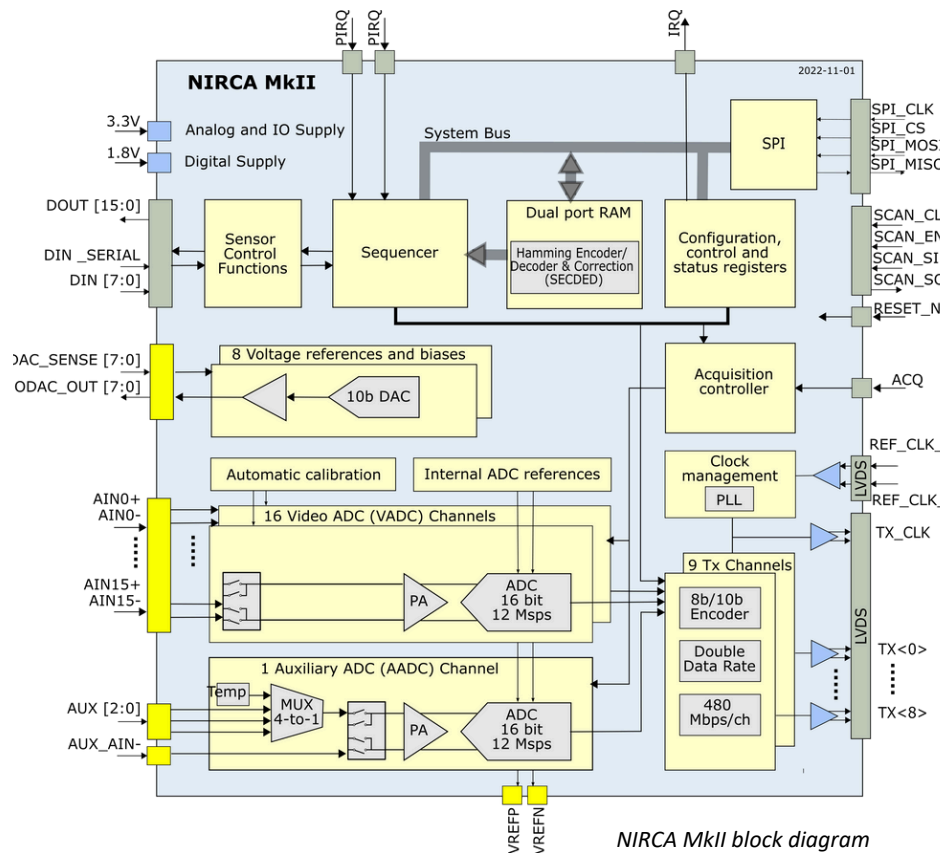
- ESCC9000
- ESCC22690 (subset)
- SEE Test ESCC 25100
- TID ESCC 22900



TECHNICAL SPECIFICATIONS

Programmable Sequencer
Custom instruction set
16× Digital outputs
8× Digital inputs
2048 instructions (ECC-RAM)
8 nested loops
Interfaces
SPI programming interface
9×480 Mbps upstream LVDS (8b/10b)
IRQ for exception, sequencer messages
Analog Acquisition
16× 16-bit, 12 Msps ADCs
Programmable gain
- x1, x1.14, x1.33, x1.6, x2, x2.67, x4, x8
Analog input configurations:
Fully differential
Pseudo differential
Analog monitoring
1× 16-bit, 12 Msps ADC
3x analog inputs (muxed),
Internal temperature sensor
Bias and supply outputs
8× Ext. voltage output (8× 10-bit DACs)
Environment
SEL Immune > 70 MeVcm ² /mg
Good SEU tolerance
-40°C to +85°C

Applications
Earth observation missions
Hybrid image sensors (MCT, μ Bolometers, InGaAs, CCDs)
Astronomical science
Space instrumentation
Security



NIRCA MkII block diagram

To make an inquiry, request a quotation or learn more about our products and services, please contact: us at sales@ideas.no