CRYO-640-500Z

640×512 Cooled MWIR Camera · 30–500 mm Zoom

Overview

The CRYO-640-500Z is a complete cooled MWIR imaging unit: a 640×512/15 µm MCT focal plane with integrated Stirling cooler behind 30–500 mm continuous-zoom optics (FOV 18.2°×14.6° → 1.0°×0.8°), NETD ≤0.3 K @ 12 cy/mrad (NFOV), full-frame video over HD-SDI + PAL. The field-proven function set — auto/manual focus with per-step memory, movable crosshair, 8 palettes, ×2/×4 e-zoom, power-on NUC and BIT — is controlled over CAN 2.0 + RS-422 from a 28 VDC rail, operating -40℃ ~ +60℃.



640×512	30–500 mm	≤0.3 K @ 12 cy/mrad (NFOV)	Stirling
RESOLUTION	CONTINUOUS ZOOM	NETD	COOLED MCT

Key Features

Cooled MCT Sensitivity

- Cooled MCT (HgCdTe) 640×512 @ 15 µm FPA with integrated Stirling cooler (IDDCA)
- NETD ≤0.3 K @ 12 cy/mrad (NFOV) — sees temperature detail uncooled LWIR cannot reach

30–500 mm Continuous Zoom

- Continuous optical zoom, field of view 18.2° × 14.6° → 1.0° × 0.8° (±5%)
- 20 equally-spaced FOV steps with per-step focus memory

Field-Proven Function Set

- Movable crosshair with position memory, white/black hot polarity, 8 palettes
- ×2 / ×4 electronic zoom, image freeze, mirror / flip

Typical Applications



Border & Coastal Surveillance



Airborne & UAV Payloads



Maritime & Shipboard



Critical Infrastructure

Technical Specifications

Thermal Imaging

Detector	Cooled MCT (HgCdTe) MWIR FPA, 640×512 @ 15 µm, integrated Stirling cooler (IDDCA)
Resolution	640×512
Pixel Pitch	15 µm
Spectral Band	3.7–4.8 µm
NETD	≤0.3 K @ 12 cy/mrad (NFOV)
Frame Rate	50 Hz
Start-up / Cool-down	≤6 min (room temp) / ≤9 min (full range)

Optics

Lens	30–500 mm continuous zoom, F/5.5
Field of View	18.2° × 14.6° → 1.0° × 0.8° (±5%)
Zoom Travel Time	≤8 s
Auto Focus Time	≤3 s
Focus Range	20 m ~ ∞

Optical Performance

MRTD	≤0.5 K @ 1.5 cy/mrad
Residual non-uniformity	≤5‰ (central 80% FOV, room temp)
Boresight stability over zoom	≤6 px (referenced to NFOV axis)
Optical distortion	≤5% (WFOV) / ≤3% (NFOV)

Imaging Functions

Crosshair	Load / hide, movable, position memory
Polarity	White hot / black hot
Palettes	8 pseudo-color palettes
E-zoom	×2 / ×4
Image Control	Brightness / contrast auto & manual, freeze, mirror / flip
Correction	Defocus NUC at power-on; background NUC on command
Image Enhancement	Supported
BIT	Power-on / start-up / periodic self-test with status feedback

Interfaces

Video Output	HD-SDI + PAL
Control Interface	CAN 2.0 + RS-422

Power, Physical & Environmental

Supply	28 VDC (22~30.3 V, per GJB181A-2003), peak ≤50 W / stable <25 W
Dimensions	≤229 × 150 × 105 mm
Weight	≤3.1 kg (±50 g)
Mounting	Base plate, flatness ≤0.02 mm
Operating Temperature	-40℃ ~ +60℃
Storage Temperature	-55℃ ~ +70℃ (GJB 150)
Shock	20 g sawtooth (or 15 g half-sine), 3 axes × 6 directions × 3

Reliability & Compliance

EMC	GJB151B-2013 (CS101/114/115/116, CE102/106/107, RE102, RS103)
Environmental	GJB 150 series: temp shock, temperature-altitude, humidity, fungus, salt fog
Supply chain	Fully domestic components

Specifications subject to change without notice.
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