TELEDYNE FLIR

High Performance, Dual Thermal and Visible OEM Camera Module

HADRON™ 640 SERIES

The ITAR-free Hadron 640 series pairs a 64MP visible camera with a performance-leading 640x512 resolution radiometric Boson® or Boson+ thermal camera in a single easy-to-integrate module. With a size, weight, and power (SWaP) optimized design, it is an ideal dual sensor payload for integration into unmanned aircraft systems (UAS), unmanned ground vehicles (UGV), robotic platforms, and emerging AI applications utilizing Teledyne FLIR Prism™ software.

Hadron 640 models share mechanical and electrical interfaces simplifying design. Compatible with Teledyne FLIR's Prism AI detection, tracking, and classification models and Prism ISP libraries for super-resolution, turbulence mitigation, contrast enhancement, and more, Hadron 640 series enables effective AI-based applications. With drivers available for market leading processors from NVIDIA®, Qualcomm®, and more plus industry-leading integration support, Hadron 640 also reduces development cost and shortens time to market.

Evaluate Prism with the Hadron 640R using the Prism Development Kit for Qualcomm RB5 today.

INDUSTRY-LEADING THERMAL AND VISIBLE CAMERA PERFORMANCE

Collect high-speed, VGA radiometric thermal and HD visible imagery.

- AI-ready with Teledyne FLIR Prism AI and ISP
- 64MP visible camera resolution
- Available radiometric, 640x512-resolution Boson+ provides industry leading NEDT of ≤20 mK
- Flexible dual 60 Hz video output via USB or MIPI

BUILT FOR INTEGRATORS

Reduce development cost and time to market with solution from a single, reliable supplier.

- ITAR-free and classified under US Department of Commerce jurisdiction as ECCN 6A003.b.4.b
- Drivers and sample code available for NVIDIA Jetson Nano, Qualcomm RB5, and more
- Highly qualified, technical services team available to support integration
- Evaluate capabilities with Prism Development Kit for Qualcomm RB5

SIZE, WEIGHT, AND POWER (SWaP) OPTIMIZED DESIGN

Optimize design and operation time with compact, lightweight, and low-power module.

- Low, steady state power consumption at 1.8W
- IP54-rated dust and water protection
- Lightweight 56 g enables longer flight time and extends battery life
- Shared mechanical and electrical interface across all models

For more information visit:
www.flir.com/hadron

www.teledyneflir.com

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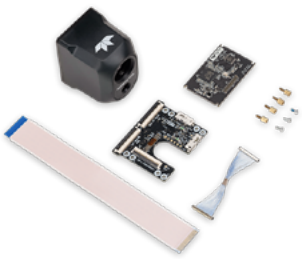
TELEDYNE FLIR

SPECIFICATIONS

Imaging & Optical	Hadron 640R	Hadron 640+	Hadron 640R+
Thermal Imaging Detector	Boson 640 x 512 pixels, 12 µm pitch, USB 3.0, 2-lane MIPI	Boson+ 640 x 512 pixels, 12 µm pitch, USB 3.0, 2-lane MIPI	Boson+ 640 x 512 pixels, 12 µm pitch, USB 3.0, 2-lane MIPI
Thermal Sensitivity	<40 mK	<20 mK	<20 mK
EO Camera Optics	EFL 4.8mm, 67° HFOV, F/# 1/2.3		
EO Camera Sensor	9248 x 6944 pixels (64.2 MP), 0.7 µm pitch, 4-lane MIPI		
EO Camera Video	Full resolution @ 60Hz		
Aspect Ratio, Visible	4 to 3		
IMU	ICM20602, I2C or SPI (selectable)		
IR Camera Optics	EFL 13.6mm, 32° HFOV, F/# 1.0		
IR Camera Video	Full resolution @ 60Hz		
Aspect Ratio, Thermal	5 to 4		
Radiometry			
Temperature Accuracy	±5 °C or less, over 0 °C to 100 °C range	Non-Radiometric	±5 °C or less, over 0 °C to 100 °C range
Electrical			
Electrical Interface	Hirose DF40C-50DP-0.4V(51) Example of mating connector: DF40HC(2.5)-50DS-0.4V(51)		
Power	5V supply voltage. Typical power dissipation < 1800mW, Max < 2900mW		
Mechanical			
Mechanical Interface	Screw mount to back plate		
Size [w/o lens]	35 x 49 x 45 mm (1.38" x 1.93" x 1.77")		
Weight	56 g		
Environment & Approvals			
Environmental Sealing	IP54 (with the rear interfaces sealed)		
Operational & Storage Temperature	-20 °C to +60 °C		
Tested EMI Performance	FCC part 15 Class B		
Software			
Software Drivers*	NVIDIA Jetson Nano, Qualcomm Snapdragon RB5, Qualcomm Snapdragon 865 *Contact Teledyne FLIR for latest software drivers		
Ordering			
Part Numbers	70640AS32-6PMRXX	70640AS32-6PAAXP	70640AS32-6PARXP

DEVELOPMENT KITS



NVIDIA Jetson Nano

Qualcomm Snapdragon RB5

Qualcomm Snapdragon 865

Prism Development Kit for Qualcomm RB5

SANTA BARBARA
Teledyne FLIR LLC, Inc.
6769 Hollister Ave.
Goleta, CA 93117
PH: +1 805.690.6602

EUROPE
Teledyne FLIR LLC, Inc.
Luxemburgstraat 2
2321 Meer
Belgium
PH: +32 (0) 3665 5106