HADRON™ 640R INTEGRATION GUIDE

April 2023 | ver. 1.11

CAMERA SPECIFICATIONS

	Thermal Camera	Visible Camera
Core	Boson®	OMNIVISION™
Resolution	640 x 512 (VGA)	64MP
HFOV	32º	67º
Input	MIPI, I2C, USB 3.0	MIPI, I2C
Output	MIPI (2-lane), USB 3.0	MIPI (4-lane)
Other	Radiometric	Configurable to Low Light

MECHANICAL & ELECTRICAL SPECIFICATIONS

Weight	56 grams
Size	36 mm (x) x 50 mm (y) x 43 mm (z)
Ingress Protection	IP54
Certifications	RoHS, REACH
Maximum Power Draw	3.0W
Typical Power Draw	1.8W

CENTER OF GRAVITY DIMENSIONS
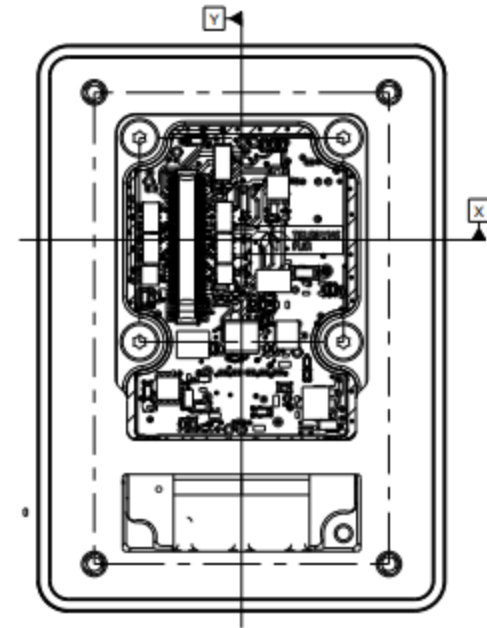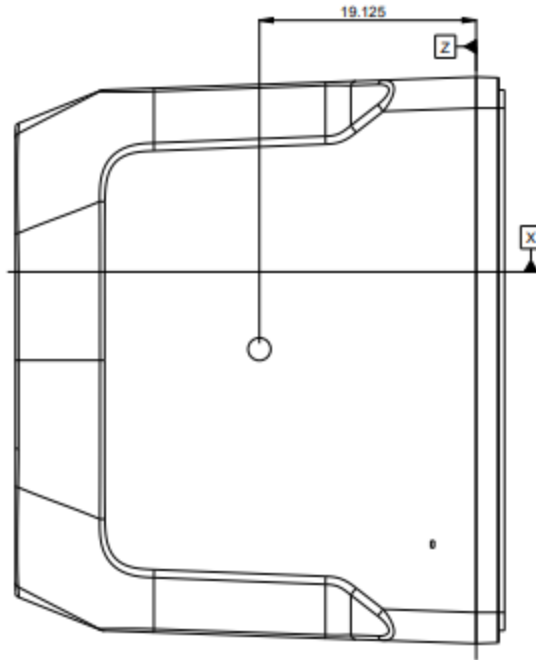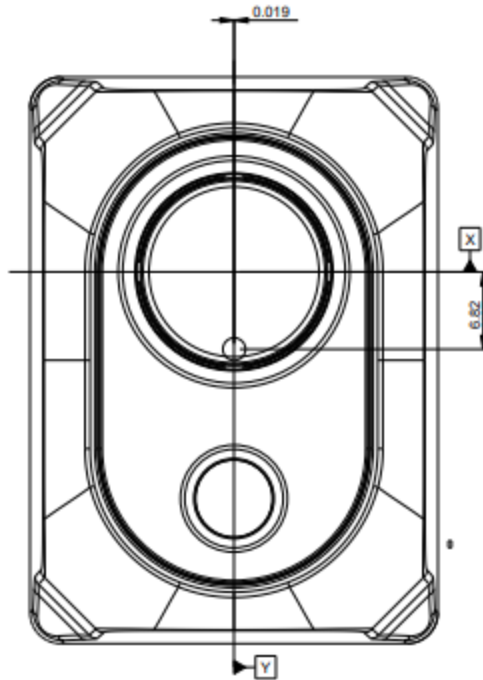
DIMENSIONS & PIN OUT ASSIGNMENT
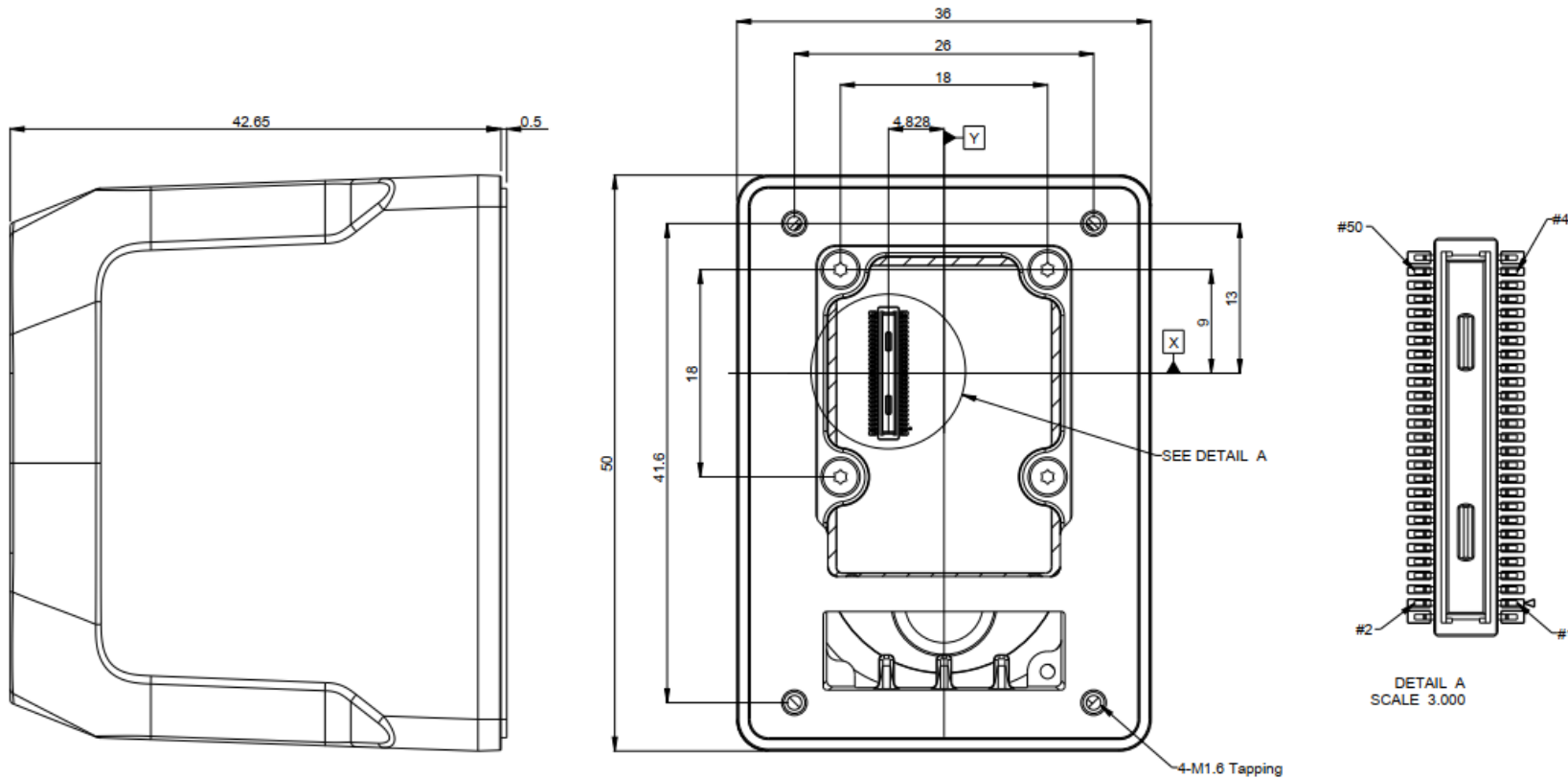
CONNECTOR:
HIROSE DF40C-50DP-0.4V(51)
MATING CONNECTOR

PIN ASSIGMENT:

Pin #	Description	Pin #	Description
1	HADRON_USB_VBUS	2	HADRON 5V
3	HADRON_USB_ID	4	HADRON 5V
5	GND	6	HADRON 5V
7	HADRON_USB_D_N	8	HADRON 5V
9	HADRON_USB_D_P	10	HADRON_RST
11	GND	12	GND
13	HADRON_USB_TX_N	14	MD3_P
15	HADRON_USB_TX_P	16	MD3_N
17	GND	18	GND
19	HADRON_USB_RX_N	20	MD1_P
21	HADRON_USB_RX_P	22	MD1_N
23	GND	24	GND
25	HADRON_TC_MIPI_D1_N	26	MC_P
27	HADRON_TC_MIPI_D1_P	28	MC_N
29	GND	30	GND
31	HADRON_TC_MIPI_D0_N	32	MD0_P
33	HADRON_TC_MIPI_D0_P	34	MD0_N
35	GND	36	GND
37	HADRON_TC_MIPI_C_N	38	MD2_P
39	HADRON_TC_MIPI_C_P	40	MD2_N
41	GND	42	GND
43	EXT_VSYNC	44	HADRON_IMU_CS
45	HADRON_IMU_INT	46	HADRON_IMU_SCK_SCL
47	HADRON_CAM_SCL	48	HADRON_IMU_MOSI_SDA
49	HADRON_CAM_SDA	50	HADRON_IMU_MISO

DETAIL A
SCALE 3.000

4-M1.6 Tapping

BLOCK DIAGRAM
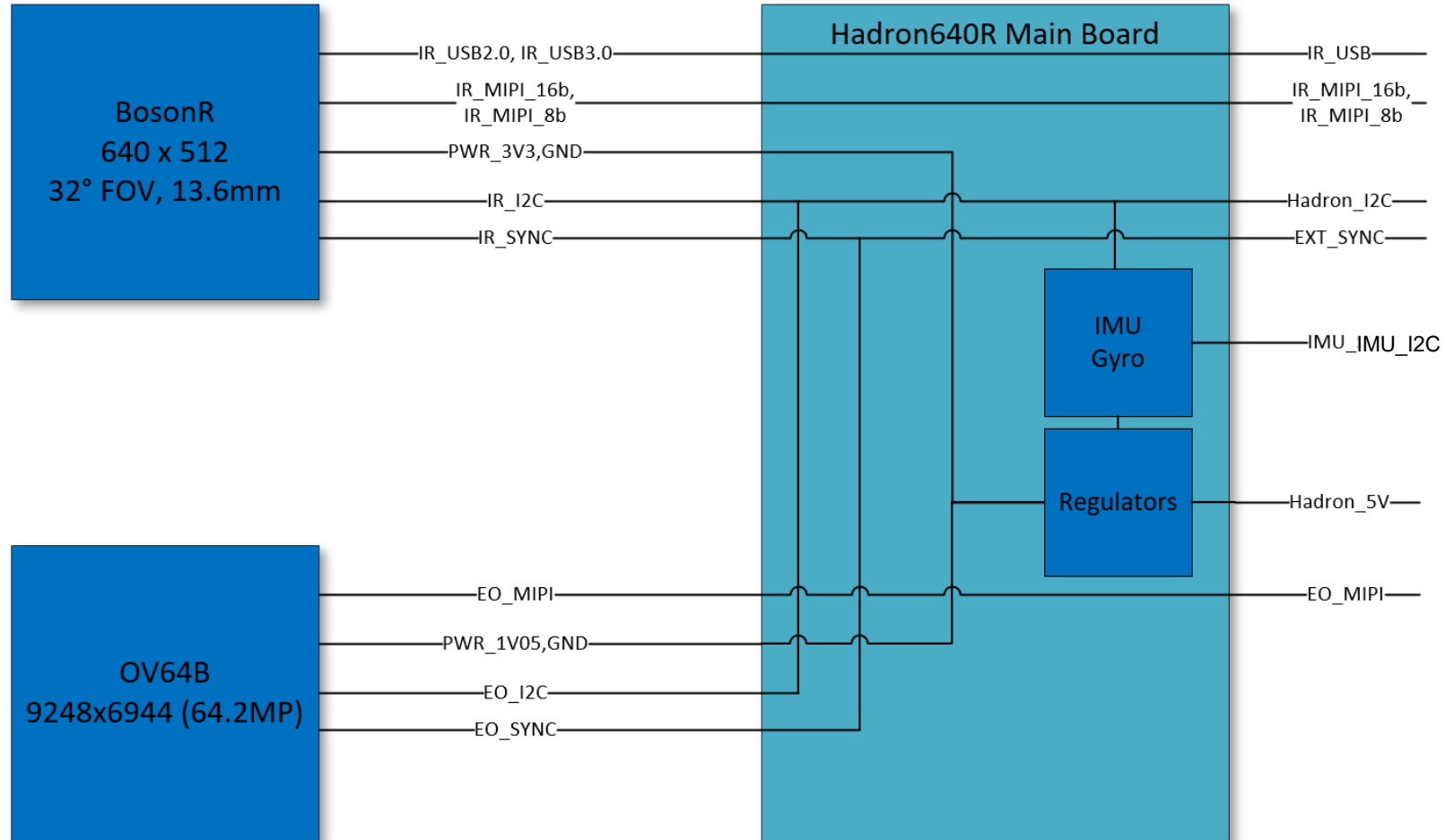
ECOSYSTEM DEFINITIONS

DEVELOPMENT ECOSYSTEM:

Display or Recording Device ← Development Board (e.g., AVerMedia D111NO Jetson Nano Development System) → Hadron 640R Development Kit

COMMERCIAL ECOSYSTEM:

Display or Recording Device ← Embedded System (e.g., QC RB5) → Customer Gimbal
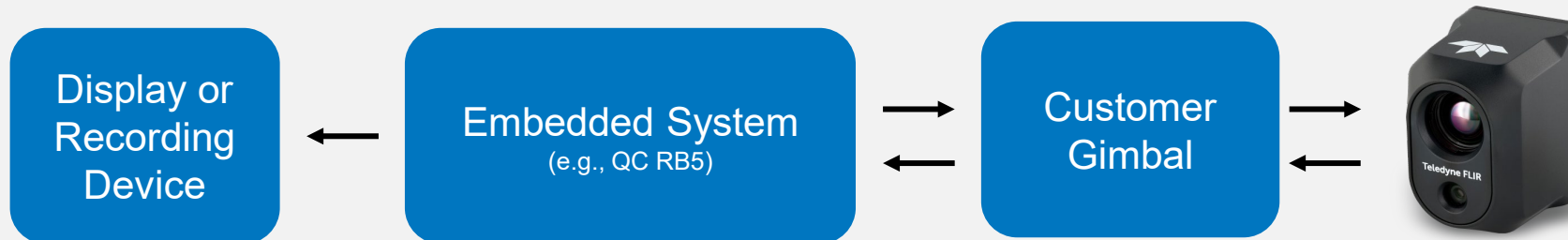
HADRON 640R DEVELOPMENT KITS

Embedded System	NVIDIA® Jetson Nano™	Qualcomm® Snapdragon 865	Qualcomm Robotics RB5
Operating System	Linux	Android	Linux
Hadron 640R Development Kit	FLIR PN 421-0095-00	FLIR PN 421-0094-00	FLIR PN 421-0096-00
Development Board (Sold Separately)	AVerMedia® D111NO Jetson Nano Engineering Kit	Lantronix® Open-Q 865XR SOM Development Kit	Qualcomm Robotics RB5 Vision Kit
Reference Driver Status	Reference Driver Complete Customers can use as a reference to create drivers for other Jetson Processors or hire FLIR recommended third parties to do so.	Reference Driver Complete 865 has an Android operating system. Customers will need to develop apps to fully integrate the Hadron 640 functions with their host device.	Reference Driver Complete Use open embedded LE. Partial functionality with Ubuntu LU.

NVIDIA JETSON NANO DEVELOPER KIT

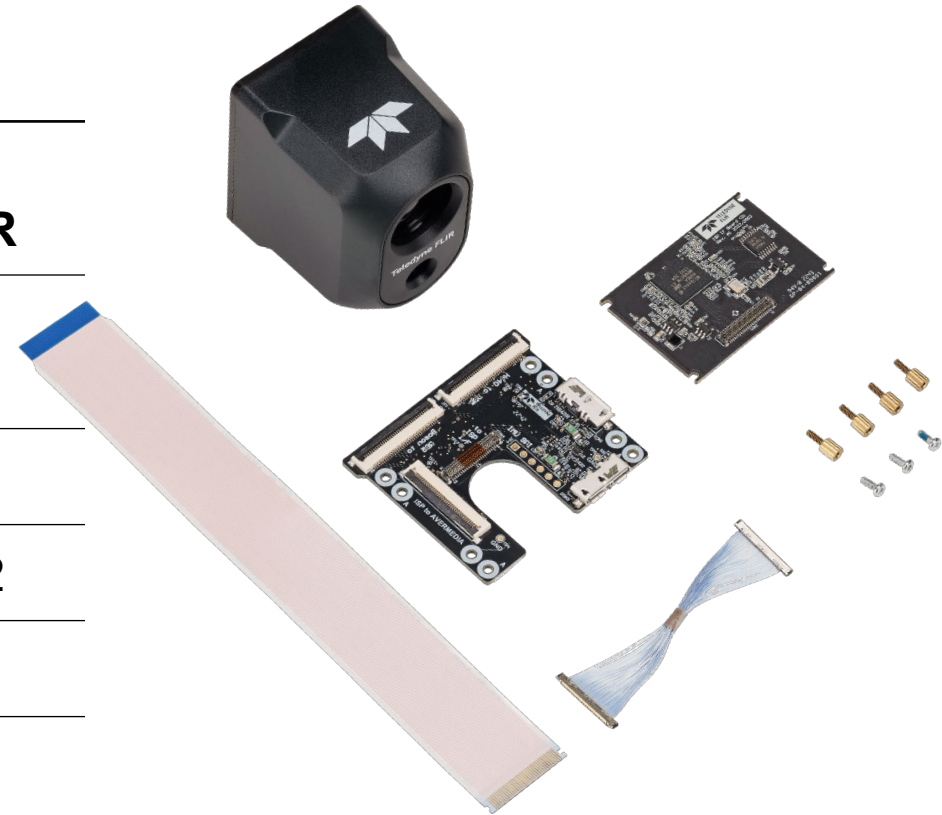| Part #:	
421-0095-00	**NVIDIA Nano Test Kit for Hadron 640R**
4244272 -	QC RB5/NVIDIA Nano Interface Board for Hadron 640R
244850 -	ISP Board
4244852 -	Cable Assembly, Univ IF FFC-20220512
4244853 -	Cable Assembly, Univ IF-20220517

QUALCOMM SNAPDRAGON 865 DEVELOPER KIT

Part #:
421-0094-00   QC 865 Open Q Test Kit for Hadron 640R

4244271 -   865 Open Q Interface Board for Hadron 640R

4244273 -   Test Board for Hadron 640R

4244851 -   Cable Assembly, JAE JF08R0R041020UA

QUALCOMM RB5 DEVELOPER KIT

Part #:	
421-0096-00	**QC RB5 Test Kit for Hadron 640R**
4244272 -	QC RB5/NVIDIA Nano Interface Board for Hadron 640R
4244273 -	Test Board for Hadron 640R
4246592 -	FPC cables (2)

REFERENCE DRIVER INTRODUCTION

	NVIDIA Jetson Nano	Qualcomm Snapdragon 865	Qualcomm RB5
Development Environment	Jetpack 4.3 (R32.3.1)	Android 10.0.0	Open Embedded LE (Partial Functionality with Ubuntu LU)
Maximal Resolution	16MP	64MP	64MP
White Balance (Defined Presets)	Yes	Yes	Yes
White Balance (Granular)	Yes	Yes	Yes
Resolution Change	Yes	Yes	Yes
Sensitivity (ISO)	Yes	Yes	Yes
Zoom	Yes	Yes	Yes
Image Capture to JPEG	Yes	Yes	Yes
RAW Image Capture	Yes	Qualcomm / Android Restricted	Yes
Brightness	Yes	Qualcomm / Android Restricted	Yes
Horizontal & Vertical Flip	Yes	Qualcomm / Android Restricted	Yes
Sharpness	Yes	Qualcomm / Android Restricted	Yes
Shutter Speed	Yes	Qualcomm / Android Restricted	Yes
Gain (Granular)	Yes	Qualcomm / Android Restricted	Yes
Auto Exposure Control	Yes	Qualcomm / Android Restricted	Yes
Binning for Low Light	Default Bin to 16MP	Qualcomm / Android Restricted	Yes
Sensor Crop Zones	Yes	Qualcomm / Android Restricted	Yes
Reading Sensor Temperature	Yes	Qualcomm / Android Restricted	Yes
Contrast	Yes	Qualcomm / Android Restricted	Yes
Saturation	Yes	Qualcomm / Android Restricted	Yes
Hue	Yes	Qualcomm / Android Restricted	Yes
WDR	Yes	Qualcomm / Android Restricted	Yes
Denoise	Yes	Qualcomm / Android Restricted	Feature Requires Image Tuning
Sensor HDR Utilization	No - ISP Does Not Support	Qualcomm / Android Restricted	Feature Requires Image Tuning

FOR MORE INFORMATION

www.flir.com/hadron640r