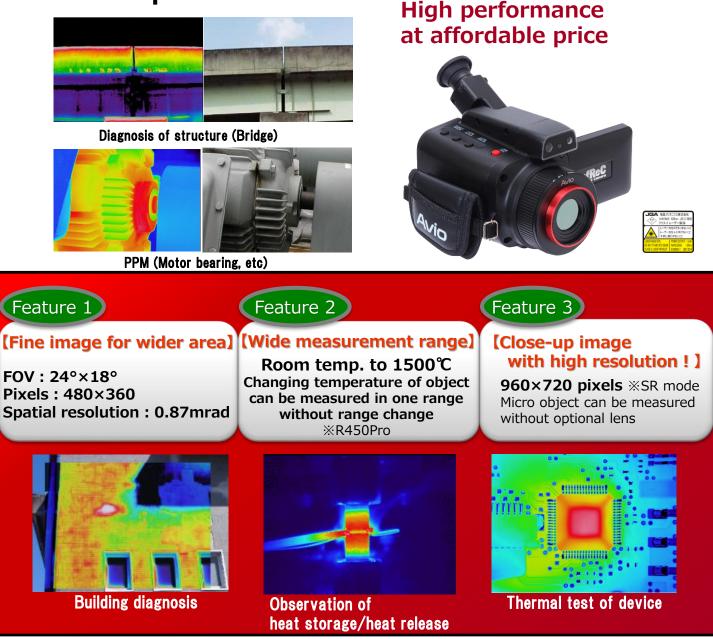


Infrared Thermal Imaging Camera

High Resolution · Multi-purpose Model

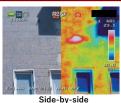
High resolution, high sensitivity, high precision ! Versatile model which is useful in wide variety of scenes from structure diagnosis to research of micro component.

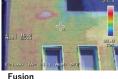




Composite mode support ease of viewing







1222

Picture-In-Picture (transparency changeable)

(transparency changeable)

Automatic Movie Recording Feature Built In(R450Pro)

Recording movie connected PC automatically by external trigger input to R450

Data recording linked with test equipment and filed facility is available without configuring I/O system



Measuring Distance and F.O.V.

Field of View and Spatial Resolution are the same magnification with measuring distance.

Lens Type			2x Telephoto Lens	Normal Lens	2x Wide Angle Lens
	Field of View(H)×(V)		21×16cm	43×32cm	86×64cm
L=1m	Spatial Resolution	Normal Mode	0.45mm	0.9mm	1.8mm
		Super Resolution	0.3mm	0.6mm	1.3mm

Options

	Options/Model	Specification/remarks
	2x Telephoto lens, IRL-TX02C-B	12° (H) x 9° (V)
Lens	2x Wide Angle Lens, IRL-WX02C-B	48° (H) x 36° (V)
	52 µ m Closeup Lens, IRL-C052UC	25mm(H) x 18.7mm(V), Working Distance 56mm
Accessory	AC adaptor, RC60G-09D-110V(US)/110V/220V	110V(US), 110V or 220V
	Rechargeable Battery Pack, 2UR18650F	2500mAh Driving Hours : 2.5 Hours (typical)
	Battery Charger, NC-LSC05-110V(US)/110V/220V	110V(US), 110V or 220V

Specification

	Feature		R450Pro	R450Pro-D	R450	R450-D				
			Uncooled Focal Plane A	rray (Microbolometer)						
	Spectr	al Range		8 to 14 μ m						
	Measuring Range		-40 to 1500°C	-40 to 1500°C -40 to 650°C						
_ I	Sensit	ivity (NETD)		0.025°C at 30°C (with S	0.025°C at 30°C (with S/N improvement)					
Basic	Accuracy		±1°C *1							
P	Frame	Rate		40Hz	8.0Hz	40Hz	8.0Hz			
Basic Performance	Detector Pixels		480(H) × 360(V) pixels	480(H) × 360(V) pixels						
a l	Record	ding Pixels		Standard mode: 480(H)	× 360(V) , Super Resolu	tion (SR) mode: 960(H) × 720(V) *2			
*	Field of View		24'(H) × 18'(V) (with standard lens)							
1	Spatial Resolution		Standard mode: 0.87mrad , Super Resolution (SR) mode :0.58mrad equivalent *3							
	Focal Distance		10cm to infinity (with standard lens) *4							
	Focus		Auto/ Manual							
1	Auto Function		Auto Scale, Auto Focus, Full Auto							
	Color Pallets		7 pallets (Rainbow, Brightness, Hot-white, Hot-black, etc.)							
3	Gradation		256 / 32 / 16 / 8 grade							
Image Display			CMOS camera 5M pixels							
Dis 1	Visible Camera Visible/Thermal Fusion			; ransparency changeable)	Pioturo-In-Pioturo (t	ransparapay shangaable)				
play			10001				lay, 9 images multi-display			
	Display	/ Functions		(replay mode)	position	and over				
l	Image Quality Improvement		Denoising, Averaging (with	th ghost rejection), Edge	enhancement					
	Point	Temperature		10 Movable Points, Tem	10 Movable Points, Temperature search: MAX/MIN x 1 each, Delta T					
_ 1	Tempe	rature Displ	ay in Assigned Region	MAX, MIN and AVG in B	OX (Up to 5 boxes)	N/A				
Measuring Functions	Line P	rofile		Horizontal, Vertical, Hori	izontal & Vertical					
suri:		-		Alarm Display, Alarm So	und, Color Alarm, Alarm F	Recording,				
۴.	Alarm	Function		Alarm Signal Output						
un o	Tempe	rature Corr	ection	Emissivity, Environment	Emissivity, Environmental/Background, Distance					
tion		Emissivity		Multi-point Correction, E						
~				Emissivity Reverse Calc	ulation	N/A				
		Drift Stabilizer		Yes		N/A				
	Storag	Storage Device		SD card, Conforms to SDHC						
	Data F	Data Format		Still image : JPEG with temperature data,14bit (with visible image)						
ł	Data S			Movie : SVX file (Dedicated format) Still image(JPEG with temperature data,14bit), Recorded with visible image						
	Data a		olution (SR)	Yes						
		Quick Pan		Horizontal equivalent to 75°/ Vertical equivalent to 56°						
		SD Movie		Max 5Hz Max 4Hz N/A						
		Interval Re		3 sec to 60 min interval.	3 sec to 60 min interval, with Visible image recorded					
<u>د</u>			igger Recording	Yes N/A						
or ag		Voice Rec		30sec Recording, replay	per a Thermal image					
÷		Text Annotation		1		age. Characters importe	Annotate up to 128 Characters per a Thermal Image Annotate up to 128 Characters per a Thermal Image. Characters imported from SD Card			
2		Text Anno		Annotate up to 126 Gharacters per a Thermal Image. Gharacters imported from 3D Gard						
Storage & Output		Text Anno USB2.0								
put				Yes						
put			Mass Storage	Yes Thermal image: Max:	Thermal image: Max:	Thermal image: Max:				
put	Int			Thermal image: Max: 40Hz, Recorded with	8Hz, Recorded with	Thermal image: Max: 40Hz, Recorded with visible image *5	Thermal image: Max:8Hz, Recorded with visible image			
put	Interfac		Mass Storage Movie Data Transfer	Thermal image: Max: 40Hz, Recorded with visible image *5 Automatic recording fun-	8Hz, Recorded with visible image *5		Thermal image: Max:8Hz、			
put	Interface	USB2.0	Mass Storage Movie Data Transfer External Trigger Input	Thermal image: Max: 40Hz, Recorded with visible image *5 Automatic recording fun- input	8Hz, Recorded with visible image *5 ction by external trigger	40Hz, Recorded with visible image *5	Thermal image: Max:8Hz, Recorded with visible image			
put	Interface	USB2.0 Video Outp	Mass Storage Movie Data Transfer External Trigger Input ut	Thermal image: Max: 40Hz, Recorded with visible image *5 Automatic recording fun- input NTSC / PAL Switchable	8Hz, Recorded with visible image *5 ction by external trigger	40Hz, Recorded with visible image *5 N/A	Thermal image: Max:8Hz, Recorded with visible image			
put	Interface	USB2.0 Video Outp Alarm Outp	Mass Storage Movie Data Transfer External Trigger Input ut ut	Thermal image: Max: 40Hz, Recorded with visible image *5 Automatic recording fun- input NTSC / PAL Switchable Contact Signal. No Volta	8Hz, Recorded with visible image *5 ction by external trigger	40Hz, Recorded with visible image *5 N/A N/A	Thermal image: Max:8Hz, Recorded with visible image			
put		USB2.0 Video Out; Alarm Out; External Tr	Mass Storage Movie Data Transfer External Trigger Input ut ut	Thermal image: Max: 40Hz, Recorded with visible image *5 Automatic recording fun- input NTSC / PAL Switchable Contact Signal. No Volta	8Hz, Recorded with visible image *5 ction by external trigger age	40Hz, Recorded with visible image *5 N/A N/A N/A	Thermal image: Max:8Hz, Recorded with visible image *5			
put	Display	USB2.0 Video Outp Alarm Outp External Tr	Mass Storage Movie Data Transfer External Trigger Input ut ut	Thermal image: Max: 40Hz, Recorded with visible image *5 Automatic recording fun- input NTSC / PAL Switchable Contact Signal. No Volta Pulse Signal 3.5" LCD Monitor (with	8Hz, Recorded with visible image *5 ction by external trigger age tilt and brightness adjustn	40Hz, Recorded with visible image *5 N/A N/A N/A nent), Color View Finder	Thermal image: Max:8Hz, Recorded with visible image *5 yr (with tilt adjustment)			
put		USB2.0 Video Outp Alarm Outp External Tr /	Mass Storage Movie Data Transfer External Trigger Input ut ut igger Input	Thermal image: Max: 40Hz, Recorded with visible image *5 Automatic recording fun- input NTSC / PAL Switchable Contact Signal. No Volta Pulse Signal 3.5" LCD Monitor (with 1 Laser Pointer (Red, clas	8Hz, Recorded with visible image *5 ction by external trigger inge tilt and brightness adjustr s 2, IEC 60825-1 2007/2	40Hz, Recorded with visible image *5 N/A N/A N/A nent), Color View Finder	Thermal image: Max:8Hz, Recorded with visible image *5 yr (with tilt adjustment)			
put	Display	USB2.0 Video Outr Alarm Outr External Tr ry Operating	Mass Storage Movie Data Transfer External Trigger Input ut igger Input Temperature & Humidity	Thermal image: Max: 40Hz, Recorded with visible image 45 Automatic recording fun- input NTSC / PAL Switchable Contact Signal. No Volta Pulse Signal 3.5" LCD Monitor (with 1 Laser Pointer (Red, clas -15" C to 50" C, 90%RI	8Hz, Recorded with visible image +5 ction by external trigger ge tilt and brightness adjustr s 2, IEC 60825-1 2007/2 H (non-condensing)	40Hz, Recorded with visible image *5 N/A N/A N/A nent), Color View Finder	Thermal image: Max:8Hz, Recorded with visible image *5 yr (with tilt adjustment)			
put	Display	USB2.0 Video Outp Alarm Outp External Tr ry Operating Storage Te	Mass Storage Movie Data Transfer External Trigger Input ut ut Jigger Input Temperature & Humidity movarture & Humidity	Thermal image: Max: 40Hz, Recorded with visible image with visible image Angel Record and Angel Automatic recording fun- input Ontact Signal No Volta 3.5" LCD Monitor (with 1 Laser Pointer (Red, clas -15" C to 50" C, 90NRI -40" C to 70" C, 90NRI	8Hz, Recorded with visible image *5 tion by external trigger age tilt and brightness adjustr s 2, IEC 60825-12007/2 H (non-condensing) H (non-condensing)	40Hz, Recorded with visible image *5 N/A N/A N/A nent), Color View Finder	Thermal image: Max:8Hz, Recorded with visible image *5 yr (with tilt adjustment)			
put	Display	USB2.0 Video Outp Alarm Outp External Tr V Operating Storage Te Vibration 8	Mass Storage Movie Data Transfer External Trigger Input ut ut Jigger Input Temperature & Humidity movarture & Humidity	Thermal image: Max: 40Hz, Recorded with visible image 45 Automatic recording fun- input NTSC / PAL Switchable Contact Signal A: No Vota Pulse Signal 35" LCD Monitor (with 1 Laser Pointer (Red. clas 35" LCD Monitor (vitch 1 Laser Pointer (Red. clas -15" C to 50" 0, 90/RI 29.4m/sec ² (3G), 294m	8H2, Recorded with visible image +5 ction by external trigger i ge 2. IEC 60825-1 2007/2 H (non-condensing) H (non-condensing) //sec ² (30G)	40Hz, Recorded with visible image *5 N/A N/A N/A nent), Color View Finder	Thermal image: Max:8Hz, Recorded with visible image *5 yr (with tilt adjustment)			
	Display	Video Outp Alarm Outp External Tr ry Operating Storage Te Vibration & EMC	Mass Storage Movie Data Transfer External Trigger Input ut igger Input Temperature & Humidity mearature & Humidity Shock	Thermal image: Max: 04Hz, Record with visible image #5 Automatic recording fun- input NTSC / PAL Switchable Contact Signal. No Volta Pulse Signal 5.5° LCD Monitor (with Laser Pointer (Red. class -15° C to 50° C, 90%RI -40° C to 70° C, 90%RI 29.4m/sec ² (3G), 294m Conform to CE regulatio	8Hz, Recorded with visible image *5 tion by external trigger inge tilt and brightness adjustr s 2, IEC 60825-1 2007/2 H (non-condensing) H (non-condensing) H (non-condensing) resc ² (30G) ns (Class A)	40Hz, Recorded with visible image *5 N/A N/A N/A nent), Color View Finder	Thermal image: Max:8Hz, Recorded with visible image *5 yr (with tilt adjustment)			
	Display Auxilia Resistance	USB2.0 Video Outp Alarm Outp External Tr Operating Storage Te Vibration & EMC Dust & spl	Mass Storage Movie Data Transfer External Trigger Input ut igger Input Temperature & Humidity mearature & Humidity Shock	Thermal image: Max: 40Hz, Recorded with visible image +5 Automatic recording fun- input. NTSC / PAL Switchable Contact Signal No Volta Pulse Signal 3.5" LCD Monitor (with Laser Pointer (Red. clas -40" C to 70" C, 90kRI 29.4m/sec ² (30), 294m Conform to CE regulatio Protection class IP54 ec	8Hz, Recorded with visible image 45 ction by external trigger igge 2 . IEC 60825-1 2007/2 H (non-condensing) H (non-condensing) M (non-condensing) r/sec ² (30G) ns (Class A) ulvalen	40Hz, Recorded with visible image *5 N/A N/A N/A nent), Color View Finder	Thermal image: Max:8Hz, Recorded with visible image *5 yr (with tilt adjustment)			
	Display Auxilia Resistance Batter	USB2.0 Video Outp Alarm Outp External Tr / / / / / / / / / / / / / / / / / / /	Mass Storage Movie Data Transfer External Trigger Input ut igger Input Temperature & Humidity mearature & Humidity Shock	Thermal image: Ma:: Untractional image 45 Automatic recording fum- input: NTSC / PAL Switchable Contact Signal. No Volta Pulse Signal 3.5" LCD Monitor (with 1 Laser Pointer (Red. clas -15" C to 50" C, 90KR 29.4m/sec? (30), 294m Portection class IP54 ec 25.hours (Typ). Rechargu	8Hz, Recorded with visible image +5 ction by external trigger in ge bit and brightness adjust f a 2. IEC 60825-1 2007/2 H (non-condensing) //sec ² (30G) ns (Glass A) juvalen eable Li-Ion battery	40Hz, Recorded with visible image *5 N/A N/A N/A nent), Color View Finder	Thermal image: Max: 8Hz, Recorded with visible image *5 r (with tilt adjustment)			
	Display Auxilia Resistance	USB2.0 Video Outp Alarm Outp External Tr / / / / / / / / / / / / / / / / / / /	Mass Storage Movie Data Transfer External Trigger Input ut igger Input Temperature & Humidity mearature & Humidity Shock	Thermal image: Max: 40Hz, Recorded with visible image +5 Automatic recording fun- input. NTSC / PAL Switchable Contact Signal No Volta Pulse Signal 3.5" LCD Monitor (with Laser Pointer (Red. clas -40" C to 70" C, 90kRI 29.4m/sec ² (30), 294m Conform to CE regulatio Protection class IP54 ec	8Hz, Recorded with visible image +5 ction by external trigger in ge bit and brightness adjust f a 2. IEC 60825-1 2007/2 H (non-condensing) //sec ² (30G) ns (Glass A) juvalen eable Li-Ion battery	40Hz, Recorded with visible image *5 N/A N/A N/A nent), Color View Finder	Thermal image: Max: 8Hz, Recorded with visible image *5 r (with tilt adjustment)			
	Display Auxilia Resistance Batter	USB2.0 Video Outp Alarm Out External Tr V Operating Storage Te Vibration & EMC Dust & spl y Operation wer	Mass Storage Movie Data Transfer External Trigger Input ut igger Input Temperature & Humidity mearature & Humidity Shock	Thermal image: Max: 0HHz, Record with visible image #5 Automatic recording fun- input NTSC / PAL Switchable Contact Signal. No Volta Pulse Signal 3.5" LCD Monitor (with Laser Pointer (Red. class -15" C to 50" C, 90NRI -40" C to 70" C, 90NRI -40" C, 90NRI -40" C to 70" C, 90NRI -4	8Hz, Recorded with visible image +5 ction by external trigger in ge bit and brightness adjust f a 2. IEC 60825-1 2007/2 H (non-condensing) V/sec ² (30G) ns (Glass A) ujvalen eable Li-Ion battery	40Hz, Recorded with visible image 45 N/A N/A N/A N/A N/A N/A N/A N/A DI4), LED Light, Remot	Thermal image: Max: 8Hz, Recorded with visible image *5 r (with tilt adjustment)			
put Others	Display Auxilia Resistance Batter AC Po	Video Outg Alarm Outg External Tr / Y Operating Storage Te Vibration & EMC Dust & splay y Operation wer sions	Mass Storage Movie Data Transfer External Trigger Input ut igger Input Temperature & Humidity mearature & Humidity Shock	Thermal image: Max: 40Hz, Record with viable image 45 Automatic recording furni- input NTSG / PAL Switchable Contact Signal. No Volta Pulse Signal 3.5" LCD Monitor (with Laser Pointer (Red. class -15" C to 50" C, 90%RI -40" C to 70" C, 90%RI 294m/sec ² (30), 294m Conform to CE regulation Protection class IP54 ec 2 Shours (Typ). Recharge 100V - 220V AC, 50/0 Approx. 1121 mm XW102 Approx. 1136 (including	8Hz, Recorded with visible image +5 ction by external trigger is ge bit and brightness adjust f and constant of the s 2. IEC 60825-1 2007/2 H (non-condensing) //sec ² (30G) ns (Class A) juvalen beble Li-Ion battery OHz Battery Pack)	40Hz, Recorded with vibble image 45 N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A	Thermal image: Max:8Hz, Recordd with visible image +5 r (with tilt adjustment) a Controller			
	Display Auxilia Resistance at Batter AC Po Dimen:	Video Outg Alarm Outg External Tr / Y Operating Storage Te Vibration & EMC Dust & splay y Operation wer sions	Mass Storage Movie Data Transfer External Trigger Input ut ut Temperature & Humidity Shock ash proof	Thermal image: Max: 40Hz, Recorded with visible image *5 Automatic recording fun- input NTSC / PAL Switchable Contact Signal No Volta Pulse Signal 3.5" LOD Monitor (with Laser Pointer (Red. clas -15" C to 50" C, 90%RI 29.4m/sec ² (30), 294m (Conform to CE regulation Protection class IP54 ec 2.5hours (Typ). Recharger 4 2.5hours (Typ). Recharger 4 Approx. 1.3kg (including Approx. 1.3kg (including Approx. 1.3kg (including	BHz, Recorded with visible image 45 ction by external trigger lift and brightness adjustr s 2. IEC 60825-1 2007/2 H (non-condensing) H (non-condensing) H (non-condensing) ns (Class A) puivalen seble Li-lon battery OHz imm ×D195mm (excluding Battery Pack) x 1. SD Card x 1. USB C	40Hz, Recorded with visible image +5 N/A N/A N/A N/A N/A N/A N/A N/A N/A DIA), LED Light, Remot	Thermal image: Max:8Hz, Recorded with visible image +5 r (with tilt adjustment) e Controller			
	Display Auxilia Resistance at Batter AC Po Dimens Weight Standa	Video Outp Alarm Outp External Tr Video Tr Operating Storage Te Vibration & spl y Operation wer sions	Mass Storage Movie Data Transfer External Trigger Input ut ut femperature & Humidity mperature & Humidity Shock ssh proof	Thermal image: Max: 40Hz, Recorded with visible image *5 Automatic recording fun- input NTSC / PAL Switchable Contact Signal No Volta Pulse Signal 3.5" LOD Monitor (with Laser Pointer (Red. clas -15" C to 50" C, 90%RI 29.4m/sec ² (30), 294m (Conform to CE regulation Protection class IP54 ec 2.5hours (Typ). Recharger 4 2.5hours (Typ). Recharger 4 Approx. 1.3kg (including Approx. 1.3kg (including Approx. 1.3kg (including	8Hz, Recorded with visible image +5 ction by external trigger is in a second second second second second second second second the funct condensing) V/sec ² (30G) ns (Glass A) ujuvalen seble Li-Ion battery OHz mmx D195mm (excludin, Battery Pack) x 1, SD Card x 1, USB C cry x 1, SGtMare x 1, OF	40Hz, Recorded with visible image +5 N/A N/A N/A N/A N/A N/A N/A N/A N/A DIA), LED Light, Remot	Thermal image: Max: 8Hz, Recordd with visible image +5 r (with tilt adjustment) a Controller . Grip Belt x 1, d Carrying Gase x 1			

2 of a mage only 3 This increased resolution results from detecting characteristic within all frames acquired by the SR process and removing such effects as those caused by hand vibration.

nam socialo. 44 For temperature accuracy : 30cm to infinity 45 Thermail image only when image transfer speed at 40Hz. 46 In order to transfer thermail image movie data by R450 /R450-D, you need to upgrade to "InfReC Analyzer NS9500 Professional [®] (optional software).

Power Kit

R450 series is not including AC adapter, battery charger and AC cables. Please order below Power Kit With R450 series main unit.

Item	n Model Specification/remarks		
	PKA-110VGM(US)	For 100 to 120V region (US)	AC adapter x 1,
Power Kit	PKA-110VGM	For 100 to 120V region (Taiwan)	battery charger x 1
	PKA-220VGM	For 220 to 240V region (Europe and Asia)	and AC cable x 2

Listed specifications, appearance and design are subject to change without notice. Company and commodity names are trade names or registered trade marks of each company. NIPPON AVIONICS Co., Ltd. will not be responsible for any damage of infrared detectors due to incoming strong light (e.g. laser) through lens(es). This product is subject to Japanese Export Control Law. Depending on its destination, prior assessment and authorization may be required. When exporting from country of initial purchase destination, please be sure to follow that country's export regulations as it may require an export permit beforehand.



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WARNINGS & CAUTIONS



Before using this product, please carefully read the provided Operation Manual "WARNINGS" & "CAUTIONS" section to ensure proper operation. Please do not place the product in high temperature, high humidity or high inert gas environments.

Distributor:

http://www.avio.co.jp/english/