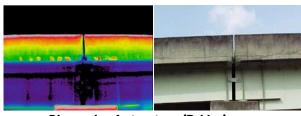


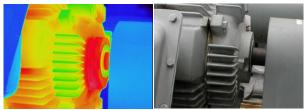
# High Resolution · Multi-purpose Model

# InfReC R450 Series

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



Diagnosis of structure (Bridge)

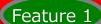


PPM (Motor bearing, etc)

**High performance** at affordable price







#### [Fine image for wider area] [Wide measurement range]

FOV: 24°×18° Pixels: 480×360

Spatial resolution: 0.87mrad

#### Feature 2

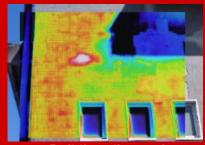
Room temp. to 1500℃ Changing temperature of object can be measured in one range

# without range change

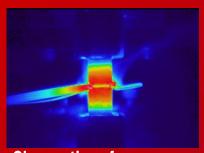
## Feature 3

#### (Close-up image with high resolution!

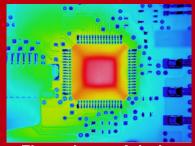
960×720 pixels %SR mode Micro object can be measured without optional lens



**Building diagnosis** 



Observation of heat storage/heat release



Thermal test of device

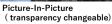
#### Composite mode support ease of viewing

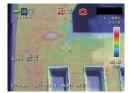




Side-by-side







**Fusion** (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)x(V)		21×16cm	43×32cm	86×64cm
L=1m		Normal Mode	ode <b>0.45mm</b> 0.9mm	0.9mm	1.8mm
	Spatial Resolution	Super Resolution (SR) mode	0.3mm	0.6mm	1.3mm

#### **Specification**

		Fe	ature	R450Pro	R450Pro-D	R450	R450-D	
	Infrared Detector		Uncooled Focal Plane A	Uncooled Focal Plane Array ( Microbolometer )				
Basic Performance	Spectral Range		8 to 14 μ m					
	Measuring Range		-40 to 1500°C	-40 to 1500°C -40 to 650°C				
	Sensit	ivity (NETD)		0.025 C at 30 C (with S	/N improvement)			
	Accur	acy		±1°C *1				
	Frame Rate		40Hz	8.0Hz	40Hz	8.0Hz		
forn	Detec	Detector Pixels		480(H) × 360(V) pixels				
nanc	Recon	ding Pixels		Standard mode: 480(H)	× 360(V), Super Resolu	rtion (SR) mode: 960(	H) × 720(V) *2	
ò	Field of View		24°(H) × 18°(V) (with st	andard lens)				
	Spatial Resolution		Standard mode: 0.87mr	ad , Super Resolution (SF	R) mode : 0 .58mrad eq	uivalent *3		
	Focal Distance		10cm to infinity (with st	10cm to infinity (with standard lens) *4				
	Focus		Auto/ Manual					
	Auto Function		Auto Scale, Auto Focus	Full Auto				
	Color Pallets		7 pallets (Rainbow, Brigh	ntness, Hot-white, Hot-bl	lack, etc.)			
Ima	Gradation		256 / 32 / 16 / 8 grade					
Image Display	Visible Camera		CMOS camera 5M pixels	3				
ispl	Visible/Thermal Fusion		Side-by-side, Fusion (	transparency changeable)	), Picture-In-Picture (	transparency changeable)		
ay	Display Functions			zoom (with display positi	oning scroll), Grid Ove	rlay, 9 images multi-display		
	<u> </u>	Quality Imp	nyomont	(replay mode)	th about minution) Ed	anhanaamant		
_	-	Temperature			th ghost rejection), Edge perature search: MAX/MI			
			ay in Assigned Region	MAX, MIN and AVG in E		N/A		
M <sub>e</sub>	Line P		ay iii Assigned Negion	Horizontal, Vertical, Hor		IN A		
Measuring Functions	Eine i	TOTILO			und, Color Alarm, Alarm F	Recording		
ğ	Alarm	Function		Alarm Signal Output	una, color raum, raum i	N/A		
ž	Temne	erature Corr	ection	Emissivity, Environment	al/Rankemund Distance	IN A		
tio	l compo		200011	Multi-point Correction,				
š		Emissivity		Emissivity Reverse Cald		N/A		
		Drift Stabi	izer	Yes		N/A		
	Storag	ge Device		SD card, Conforms to SDHC				
	Data Format		Still image: JPEG *5 with temperature data,14bit (with visible image)					
	_				Movie : SVX file ( Dedicated format)			
	Data	Storage	olution (SR)	Yes Yes	Still image(JPEG *5 with temperature data,14bit), Recorded with visible image			
		Quick Pan		Horizontal equivalent to 75"/ Vertical equivalent to 56"				
		SD Movie	Recording	Max 5Hz	Max 4Hz	N/A		
		Interval Re			3 sec to 60 min interval, with Visible image recorded			
S			igger Recording	Yes		N/A		
Storage & Output		Voice Rec		30sec Recording, replay	30sec Recording, replay per a Thermal image			
δο Φ		Text Anno			Annotate up to 128 Characters per a Thermal Image. Characters imported from SD Card			
0		USB2.0				- Q		
put.			Mass Storage	Yes				
			mass ocorage	Thermal image: Max:	Thermal image: Max:	Thermal image: Max:	Thermal image: Max: 8Hz	
	l _		M . D. T. C		8Hz, Recorded with			
	-		Movie Data Transfer	40Hz, Recorded with			Recorded with visible ima	
	Inter		Movie Data Transfer	visible image *6	visible image *6	visible image *6	Recorded with visible ima *6	
	Interface		External Trigger Input		visible image *6			
	Interface	Video Outr	External Trigger Input	visible image *6 Automatic recording fun input	visible image *6 ction by external trigger	visible image *6		
	Interface	Video Outs	External Trigger Input	visible image *6  Automatic recording fun input  NTSC / PAL Switchable	visible image *6 ction by external trigger	visible image *6		
	Interface	Alarm Out	External Trigger Input out	visible image *6 Automatic recording fun input NTSC / PAL Switchable Contact Signal. No Volta	visible image *6 ction by external trigger	visible image *6 N/A		
	Ĺ	Alarm Out	External Trigger Input out	visible image *6 Automatic recording fur input NTSC / PAL Switchable Contact Signal. No Volta	visible image *6 ction by external trigger	visible image *6 N/A N/A N/A	*6	
	Displa	Alarm Out External To y	External Trigger Input out	visible image *6 Automatic recording fur input NTSC / PAL Switchable Contact Signal. No Volt. Pulse Signal 3.5" LCD Monitor (with	visible image *6 ction by external trigger gge	visible image *6 N/A N/A N/A N/A ment), Color View Find	*6  ler (with tilt adjustment)	
	Ĺ	Alarm Out External To y ary	External Trigger Input out	visible image *6 Automatic recording fur input NTSC / PAL Switchable Contact Signal. No Volt. Pulse Signal 3.5" LCD Monitor (with	visible image *6 ction by external trigger age tilt and brightness adjusts s 2, IEC 60825-1 2007/2	visible image *6 N/A N/A N/A N/A ment), Color View Find	*6	
	Displa:	Alarm Outs External To y ary Operating	External Trigger Input  out  out  igger Input  Temperature & Humidity	visible image *6 Automatic recording fur input NTSC / PAL Switchable Contact Signal. No Volt. Pulse Signal 3.5" LCD Monitor (with Laser Pointer (Red, clas -15" C to 50" C, 90%R	visible image *6 ction by external trigger age tilt and brightness adjusts s 2, IEC 60825-1 2007/2 H (non-condensing)	visible image *6 N/A N/A N/A N/A ment), Color View Find	*6	
	Displa:	Alarm Outs External To y ary Operating	External Trigger Input  but  ut  igger Input  Temperature & Humidity  mperature & Humidity	visible image *6 Automatic recording fur input NTSC / PAL Switchable Contact Signal. No Volt: Pulse Signal 3.5" LCD Monitor (with Laser Pointer (Red, clast	visible image *6 ction by external trigger gge tilt and brightness adjusts s 2, IEC 60825-1 2007/2 H (non-condensing) H (non-condensing)	visible image *6 N/A N/A N/A N/A ment), Color View Find	*6	
	Displa:	Alarm Outp External To y ary Operating Storage Te	External Trigger Input  but  ut  igger Input  Temperature & Humidity  mperature & Humidity	visible image *6 Automatic recording fur input NTSC / PAL Switchable Contact Signal. No Volt. Pulse Signal 3.5" LCD Monitor (with Laser Pointer (Red. clas -15" C to 50" C. 90%R -40" C to 70" C. 90%R	visible image ≉6 ction by external trigger ge ege tilt and brightness adjust: s 2. IEC 60825-1 2007/2 H (non-condensing) H (non-condensing) √sec² (30G)	visible image *6 N/A N/A N/A N/A ment), Color View Find	*6	
Oth	Displar Auxilia	Alarm Outp External Tr y  ary Operating Storage Te Vibration & EMC	External Trigger Input  ut  ut  ut  ut  fermerature & Humidity  fermerature & Humidity  Shock	visible image *6 Automatic recording fur input input input input Contact Signal. No Volt. Pulse Signal 3.5" LCD Monitor (with Laser Pointer (Red. clast -1-15" C to 50" C, 90NR -40" C to 70" C, 90NR 29.4m/see <sup>2</sup> (30), 284m Conform to CE regulation to CE regulation.	visible image *6 ction by external trigger age  titl and brightness adjusts s 2, IEC 60825-1 2007/2 H (non-condensing) H (non-condensing) // sec² (300) ors (Class A)	visible image *6 N/A N/A N/A N/A ment), Color View Find	*6	
Others	Displa: Auxilia  Resistance	Alarm Outp External To y ary Operating Storage Te Vibration 8	External Trigger Input  ut  ut  ut  ut  fermerature & Humidity  fermerature & Humidity  Shock	visible image *6 Automatic recording fur input i	visible image ≈0 ction by external trigger  by  ctilit and brightness adjusts  s 2, IEC 60825-1 2007/2  H (non-condensing)  H (non-condensing)  v/sec² (30G)  ns (Class A) guivalen	visible image *6 N/A N/A N/A N/A ment), Color View Find	*6	
Others	Displa: Auxilia  Resistance	Alarm Outperstand To y  ary Operating Storage Te Vibration & EMC Dust & spl ry Operation	External Trigger Input  ut  ut  ut  ut  fermerature & Humidity  fermerature & Humidity  Shock	visible image *6 Automatic recording fur input NTSC / PAL Switchable Contact Signal. No Volt. Pulse Signal 3.5" LCD Monitor (with Laser Pointer (Red. clasta- 1-15" C to 50" C, 90NR 24" C to 70" C, 90NR Pulse (3G), 294n 25" Conform to CE regulation Protection class IP54 e 2.5hours (Typ). Recharge	visible image ≈6  titit and brightness adjusti s 2. IEC 60825-1 2007/2 H (non-condensing) H (non-condensing) N (sec² (300) ns (Class A) guivalen eable Li-lon battery	visible image *6 N/A N/A N/A N/A ment), Color View Find	*6	
Others	Displat Auxilia Resistance Batter	Alarm Out External Tri y Operating Storage Te Vibration & EMC Dust & spl y Operation ower	External Trigger Input  ut  ut  ut  ut  fermerature & Humidity  fermerature & Humidity  Shock	visible image *6 Automatic recording fur input INTSC /PAL Switchable Contact Signal. No Volt. Pulse Signal 3.5" LOD Monitor (with Laser Pointer (Red. clast -15" C to 50" C, 90NR -40" C to 70" C, 90NR Conform to CE regulatic Protection class IP54 e C 2.5hours (Typ). Recharge 1 100V — 220V AC, 50/6	viable image +6 ction by external trigger  age  gge  till and brightness adjustin  a 2. IEC 60825-1 2007/2  H (non-condensing)  viac (300)  ns (class A)  quivalen  obselb Li-lon battery  OHz	visible image +6 N/A	*6	
Others	Displa: Auxilia  Resistance Batter AC Pc Dimen	Alarm Out; External Tri  Y  Operating Storage Te Vibration & EMC Dust & spl y Operation wer	External Trigger Input  ut  ut  ut  ut  fermerature & Humidity  fermerature & Humidity  Shock	visible image *6 Automatic recording fur input i	viable image +6 ction by external trigger inge inge inge s 2. IEC 60825-1 2007/2 H (non-condensing) H (non-condensing) u/sec* (30G) ns (Class A) quivalen abble Li-lon battery OHz form x D195mm (excluding	visible image +6 N/A	*6	
Others	Display Auxilia  Resistance Batter AC Po Dimen Weight	Alarm Output External Tri y  arry  Operating Storage Te Vibration 8  EMC Dust & spl y Operation wer sions	External Trigger Input that tut tut tigger Input Temperature & Humidity mperature & Humidity Shock ssh proof	visible image *6 Automatic recording fur input NTSC / PAL Switchable Contact Signal. No Volt. Pulse Signal 3.5" LDD Monitor (with Laser Pointer (Red. clast -15" C to 50" C, 90%Red40" C to 70" C, 90%R 294m/sec"(30), 294n Conform to CB regulation Protection class IP54 e 2.5hours (Typ). Recharge 100V - 220V AC, 50/6 Approx. H12 Inm W. 13kg (including Approx. H12 Inm W. 13kg (including Approx. 13kg (including Approx. 13kg (including	viable image 46 ction by external trigger  age  till and brightness adjust a 2, IEC 68825-1 2007/2 H (non-condensing) H (non-condensing) //sec* (300) ans (Class A) guivalen abable Li-lon battery OHz Battery Pack)	visible image +6 N/A	er (with tilt adjustment) tet Controller	
Others	Display Auxilia Per invisionment Batter AC Po Dimen Weight	Alarm Out; External Tri  Y  Operating Storage Te Vibration & EMC Dust & spl y Operation wer	External Trigger Input  ut  ut  ut  ut  ut  ut  frequency  frequen	visible image *6 Automatic recording fur input i	viable image 46 ction by external trigger  age titl and brightness adjusts a 2, IEC 60825-1 2007/2 H (non-condensing) H (non-condensing) H (non-condensing) W (sec* (30G) as (Class A) quivalen asable Li-lon battery OH2 imm XD185mm (excludin Battery Pack) x 1, SD Gard x 1, USB Gard x	visible image #6 N/A	ler (with tilt adjustment) te Controller  1. Grip Belt x 1, nd Garnying Case x 1	

- \*2 Still Image 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 #3 This increased resolution results from detecting characteristic would as increased resolution results from detecting characteristic would be an advantable.

  #4 For temperature accuracy: 30cm to infinity

  #5 SAX format for USA and European countries. JPEG is not available.

  #5 Thermal image only when image transfer speed at 40Hz

  #7 In order to transfer thermal image movie data by R450 /R450-D, you need to upgrade to " InfReC Analyzer NS9500 Professional " ( optional softwa

#### **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
	AC adaptor, SDI50-9-UD-P14-110V / 220V	110V or 220V
Accessory	3-terminal Battery Pack , 2NCR18650BF-G-0077	2800mAh
	3-terminal Battery Charger , BC2S1P-110V / 220V	110V or 220V

#### **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	Model	Specification/remarks			
	Power Kit	PKB-110VGM	For 100 to 120V region	AC adapter x 1, battery charger x 1		
		PKB-220VGM	For 220 to 240V region	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.



### NIPPON AVIONICS CO.,LTD.

#### Sales Department Sensing Solution Division

Shimamura-Building, 4475, Ikonobe-cho, Tsuzuki-ku, Yokohama-shi, 224-0053, Japan

TEL: +81-45-287-0303 FAX: +81-45-287-0307 E-mail: product-irc-e@ml.avio.co.jp

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



#### **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: