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Nippon Avionics Co., Ltd.  
<http://www.avio.co.jp/english/>

## Announcing the InfRec TS600 series VGA infrared thermography cameras

Interconnection with various sensor devices and meeting a broad system demands



External appearance of the product

The InfRec TS600 series of infrared thermography cameras were announced today by Avio.\* These cameras have advanced functions and are designed for installation in facilities to meet broad market needs ranging from temperature measurement systems for process monitoring, fire prevention to security surveillance.

\*Nippon Avionics Co., Ltd., Shinagawa-ku, Tokyo; Katsuhiko Akitsu, President

The increasing trends of major accidents at power generation plants, factories and other facilities that are aging and becoming more complex is driving the demand for constructing the system solutions, which monitor for abnormal conditions and predict dangerous events. In addition to the above, strengthening of security for the nation's coasts or major facilities to protect against threats such as intruders or disruption of facilities that demands are also growing.

The TS600 series cameras are equipped with an infrared sensor that features both high sensitivity and with VGA resolution (640 × 480 pixels). They are capable of measuring temperatures with an accuracy of  $\pm 2^{\circ}\text{C}/2\%$  and are designed to be installed for monitoring use.

This series also supports Modbus TCP, a protocol that is typically used in facility control and monitoring systems such as in chemical plants and other production factories.

Especially, connection to data loggers and other Modbus-compatible devices enables low-cost introduction of the product to systems without having to construct new networks.

While the ONVIF protocol, which is generally used in video surveillance systems, is also supported, so these cameras can be easily added to existing surveillance system networks.

This series also meets various customer needs such as to add alarm settings for areas of complex shape that are not provided by the conventional alarm function, by including a software development kit (SDK) as a standard accessory, or models that support a frame rate of 7.5 Hz for use outside of Japan, etc.

As a manufacturer that provides a consistent line of services ranging from design and development to system construction, Avio does much more than simply sell cameras; leveraging our many years of experience with infrared systems and our original technology, we can respond flexibly to various needs for customization. With these products, we also provide added value to our customers and contribute to meeting a wide range of system demands, ranging from product quality management in production processes such as monitoring the temperature of die cast molds, fire prevention monitoring to detect hotspots in garbage pits, and security surveillance for railways and airports.

## ■ Models

Six basic models provide a selection of frame rates and lens type.

For detailed specifications, please refer to the specification sheet provided separately.

Models	Lens	Frame rate	Product Delivery
TS610	37° x 28°	30Hz *1	Beginning of February 2017
TS620	71° x 53°		
TS630	90° x 68°		
TS610-D	37° x 28°	7.5Hz *2	
TS620-D	71° x 53°		
TS630-D	90° x 68°		

\*1: These products are the items with requirement of Export License, regulated under Export Law of Japan.

\*2: These products are the items that are controlled by Japan Export Law, but can be exported without Export License of Japan in general.

Remarks: Please contact us for further details on Export Control issue.

## ■ Main features

### 1) Latest VGA sensor technology for high image quality

Use of the latest VGA infrared sensor that provides both high sensitivity and high resolution (640 × 480 pixels) with clear and high thermal image quality.

### 2) Highly accurate temperature measurement ( $\pm 2^{\circ}\text{C}/2\%$ )

This feature meets market needs for highly accurate temperature sensing, such as in process monitoring or fire prevention monitoring.

### 3) Three lens systems

- The lineup includes three wide-angle models in basic, that provide horizontal fields of views with 37°, 71°, and 90°. Models can be selected that provide fields of view suitable for various purposes ranging from monitoring of die cast mold temperature to the monitoring of broad areas such as fire monitoring in garbage pits.
- We can also flexibly meet particular needs for protective lens coatings and custom lens types, etc.

### 4) Temperature range up to 1,500°C

This feature enables various temperature measurement scenarios, such as monitoring the temperature of die casting molds, monitoring the temperature of furnace materials and steel mills and other plants facilities, or measuring the temperature of metal or glass products etc.

### 5) Three communication protocols supported

- This series supports Modbus TCP, which is generally used for communication with controllers. In petroleum chemical plants, for example, measurement data such as for voltage, current, gas flow rate, and thermocouple output are collected for use in monitoring and control by a Distributed Control System (DCS) using the Modbus protocol. The TS600 series cameras can be added on to existing control systems by connecting to Modbus-compatible devices such as data loggers of DCS via Ethernet.
- Support for the ONVIF protocol generally used in video surveillance enables these cameras to be added on to existing camera network systems.
- The TS protocol is supported for compatibility with Avio former TS models. Data that can be used in temperature analysis is output, enabling various kinds of analysis. Effective use of assets developed with previous versions of the SDK is also possible when replacing previous models.

### 6) Improved camera alarm functions

- The camera itself is equipped with an alarm signal output function, making it possible to

construct a dual alarm system by using this function together with the PC alarm signal output.

- The display screen can be divided into as many as 32 areas using straight, polygon and curved lines so that complex monitoring areas can be defined.

Monitoring areas of complex shape were not possible with the previous models because the alarm areas could only be defined with square shapes, while this new series allows you to define up to 32 areas that you would like to monitor using straight lines, polygon and curves, so it is possible to detect abnormal temperatures of specific areas unaffected by lighting and other sources of heat. This feature improves quality management in process monitoring such as of mold production lines, etc. It also enables advanced safety management such as in plant fire prevention monitoring or security surveillance.

#### **7) Optional remote control for easy camera set up**

The remote control can be used to easily and efficiently change the camera settings without using a personal computer when installing and adjusting the camera or performing maintenance.

#### **8) Compact, lightweight, and energy efficient**

The cameras in this series are 50% smaller, 30% lighter, and use 20% less power than Avio previous models (for the comparison of models with the 37° lens camera).

#### **9) An SDK for programming the camera is standard equipment**

A software development kit (SDK) is provided as a standard accessory so that system integrators or customers can write their own programs.

#### **Inquiries:**

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## TS600 Series

Type	TS610	TS610-D	TS620	TS620-D	TS630	TS630-D
Frame Rate	30Hz	7.5Hz	30Hz	7.5Hz	30Hz	7.5Hz
Field of View	37.5°×28.1°		71.2°×53.4°		90.2°×67.7°	
Spatial Resolution	1.0mrad		2.2mrad		3.1mrad	

## Specification

Basic Performance	Infrared Detector	UFPA (Microbolometer)
	Spectral Range	8 to 14um
	Measuring Range	-40°C to 1500°C
	Sensitivity(NETD)	0.03°C at 25°C (with S/N improvement)
	Accuracy	±2°C or ±2% (Range1,2)
	Detector Pixels	640(H)×480(V) pixels
	Focus	Pan-focus
Image Display	Auto Function	Auto Scale
	Color Palettes	7 Palettes (Rainbow,Brightness,Hot-white,Hot-black,etc)
	Image Quality Improvement	Denoising, Averaging (OFF / Low / Middle / High with ghost rejection), Edge enhancement
Measuring Function	Point Temperature	10 Movable Points,Temperature Tracking:MAX/MIN ×1 each, Delta T
	Temperature Display in Assigned Area	5 Boxes
	Line Profile	Horizontal, Vertical, Horizontal & Vertical
	Alarm Function	Alarm Display, Color Alarm, Alarm Signal Output 32 Arbitrary shape areas(by using Remote Program)
	Temperature Correction	Emissivity,Multi-point Emissivity,Enviromental/Background, Distance, NUC
Interface	Ethernet	100/10BASE-T (RJ-45)
	Protocol	Modbus, ONVIF, TS Protocol
	Video output	NTSC or PAL (BNC)
	Alarm Output	Non-voltage contact
	External NUC Input	1ch
Others	Operating Temperature & Humidity	-15°C to 50°C, 90%RH (non-condensing)
	Storage Temperature & Humidity	-40°C to 70°C, 90%RH (non-condensing)
	AC Power	DC 12V ±1V
	Power Consumption	8W (Typ.)
	Dimensions	Approx. 68mm(H)×68mm(W)×175mm(D)
	Weight	Approx. 800g
	Vibration / Shock	19.6m/s <sup>2</sup> (2G), 147m/s <sup>2</sup> (15G)
	Dust / Splash Proof	Protection class IP54 equivalent
	Standard attachment	DC Power cable, CD-ROM(Manual,Remote Program,NS9500LT,SDK)