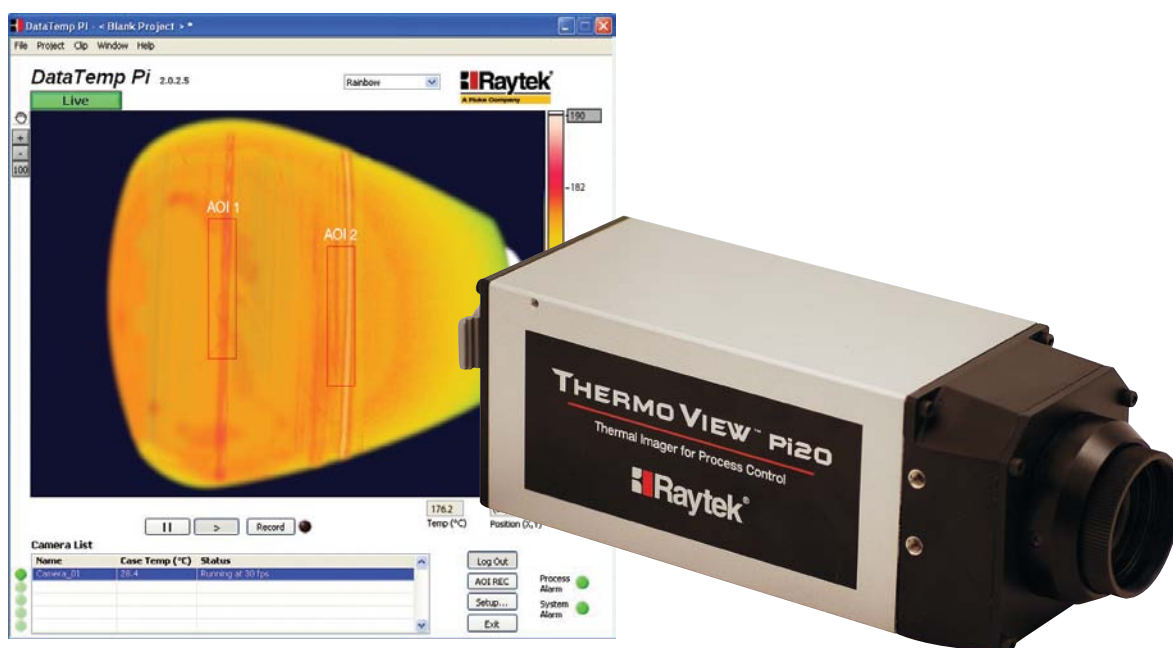# ThermoView™ Pi20

High Performance Thermal Imager for Industrial Applications

ThermoView Pi20 Key Features:

■ Thermal imaging for moving or stationary targets

■ DataTemp® Pi thermal imaging software

■ Multiple temperature ranges and lens options

■ On-board Ethernet

■ Full complement of accessories

ThermoView Pi20 Highlights

- ThermoView Pi20 is a rugged thermal imaging camera designed for industrial process control applications. The camera is designed with an IP54 rating.

- ThermoView Pi20 cameras are offered in two temperature ranges: -40 to 500°C (-40°F to 932°F) and 200 to 2000°C (392°F to 3632°F). For each temperature range, two lens options are available: 21.7° x 16°, 30° x 22° or 45.2° x 33.7°.

- ThermoView Pi20 is available with remotely adjustable focus optics.

- ThermoView Pi20 provides easy networking over long distances using the standard Ethernet interface. This interface allows for the PC operating the DataTemp Pi (DTPi) software to be located far away. The Ethernet interface transmits up to 30 frames per second of imaging data and also allows for camera control. For long Ethernet cable runs beyond 90 m, additional fiber optic Ethernet accessories are available.

- A full complement of hardware accessories includes:

  High temperature and outdoor enclosures: To meet specifications for the demanding environments Raytek® products are typically installed into, an IP67 (NEMA 4) rated enclosure is available with integrated cooling and air purge options.

  Integrated Junction Box: Allows I/O modules, power supply, and other accessories to be placed in a DIN rail backplane sealed enclosure.

  Industrial power supply: A DIN rail backplane mounted power supply is provided standard with every ThermoView Pi20 camera. The power supply is capable of operating the ThermoView Pi20 camera, as well as the remote I/O modules.

  Analog and digital I/O modules: Ethernet based modules provide digital inputs, analog outputs and relay outputs when connected to DTPi software.

  Fiber optic Ethernet cable and converters: For extremely long Ethernet cable runs, Raytek offers converters and fiber optic cable options.

  Mounting bracket: This allows for easy installation of the ThermoView Pi20 camera. The mounting bracket provides an easy base mounting capability for the Pi20 camera and is also suitable for tripod mounting.

Raytek offers the following software solutions to meet your application requirements:

- The ThermoView Pi20 camera is easily interfaced to the DataTemp Pi software. This software is fully featured to allow for real time viewing, saving and playback of images from the ThermoView Pi20 camera. The software is intuitive, easy-to-use and is designed to be set up and operational for your application within minutes. With this PC based software, you can view and analyze live or archived images. In addition, the software interfaces to remote I/O modules to be used as triggering inputs, process alarm and analog outputs.

- Raytek also offers a LabVIEW and C++ based Software Development Kit (SDK) for users who need to develop their own customized software solutions.

The ThermoView Pi20 camera, combined with our easy-to-use, fully featured DataTemp DTPi software, allows us to target applications in furnace refractory monitoring, semiconductor and solar, fire detection and prevention, glass, plastics, automotive, building, food & beverage, and petrochemical manufacturing. In addition, we have developed customized solutions for the following applications:

- Engine Testing
- Steel Coating
- Metal Forming
- Materials Testing
- Solar Module Testing
- Automotive Fabrication Applications
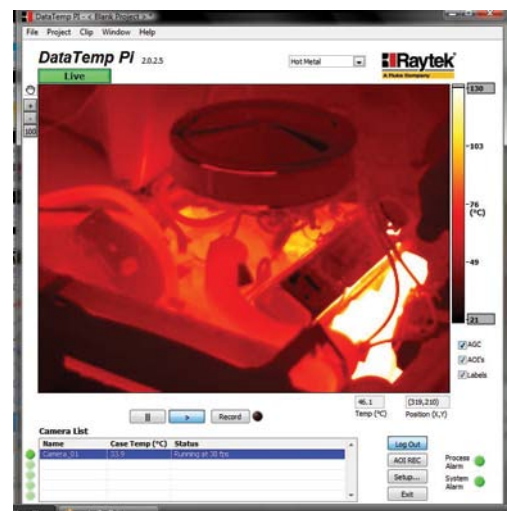
ThermoView Pi20 Camera Specifications

Measuring range	RAYPi20LT Ranges below are user selectable		RAYPi20HT
	-40 to 120 °C (-40 to 248 ºF)	0 to 500 °C (32 to 932 ºF)	200 to 2000 °C (392 to 3632 ºF)
Measurement accuracy	±2 °C or ±2 % (reading)		
Spectral range	8-14 µm		
Detector	Uncooled focal plane array		
ThermoView Pi20 lens options	**21.7° LENS (MA) Manual Focus**	**30° LENS (MB) Manual Focus**	**45° LENS (RC) Remote Focus**
Field of view Horizontal	21.7°	30°	45.2°
Vertical	16.4°	22.7°	33.7°
I.F.O.V	1.2 mrad	1.7 mrad	2.4 mrad
Focus range	300 mm (12 inch) to ∞ (21.7º, 30°, 45.2° Lens)		
Ethernet Frame time	30 frames/sec		
Number of pixels	320 x 240		
Emissivity correction	0.10 to 1.00		
Video output	NTSC/PAL, Composite video		
Interface	Ethernet, RS-232C (requires optional cable accessory)		
LED display	To indicate power is supplied to camera		
Operating temperature	-15 to 50 °C (5 to 122 ºF)		
Storage temperature	-40 to 70 °C (-40 to 158 ºF)		
Humidity	Up to 90% non-condensing		
Power supply	DC + 12 V (nominal)		
Power consumption	8 W (Typical) 13 W (MAX)		
Shock resistance	294 m/sec^2 (30G), (IEC60068-2-27)		
Vibration resistance	29.4 m/sec^2 (3G), (IEC60068-2-6)		
Environmental Protection	IP54, (IEC60529)		
Dimensions (W x H x D)	Approx 65 x 65 x 208 mm (2.5 x 2.5 x 8.1 inch)		
Weight	Approx 1.0 kg (2.20 lbs)		

Standard Package Components
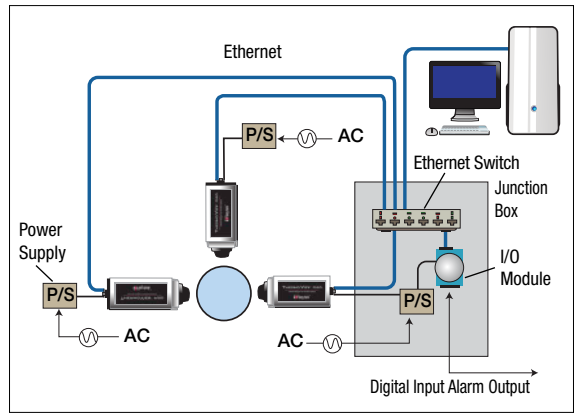
ThermoView Pi20 Thermal Imager package includes:

Model	Standard RAYPi20 camera shipment
▪ RAYPi20XXXX	RAYPi20 camera
▪ XXXPi20PSC	Power supply cable 7.5 m (24 ft)
▪ XXXPi20EC1	Ethernet cable 7.5 m (24 ft)
▪ XXXPi20ECC	Ethernet crossover adapter
▪ XXXPi20PS1	Industrial power supply
	Quick Start instructions
	Installation and operations manual and ThermoView start-up software application (TSA) on CD
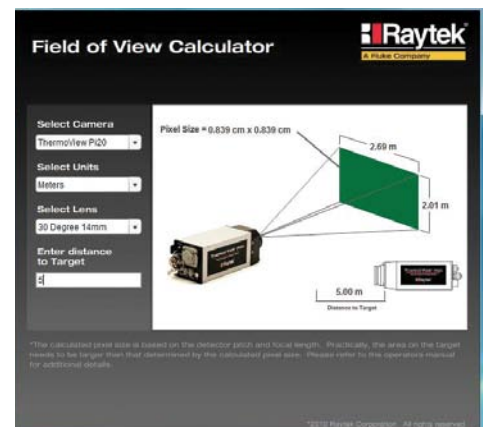
ThermoView Pi20 Camera Ordering Information

ThermoView Pi20 multi camera set-up example

Cameras

Raytek Model	Description	Field of View
RAYPi20LTMA	-40 to 500 °C (-40 to 932 °F), 21.7° lens	21.7° x 16°
RAYPi20HTMA	200 to 2000 °C (392 to 3632 °F), 21.7° lens	21.7° x 16°
RAYPi20LTMB	-40 to 500 °C (-40 to 932 °F), 30° lens	30° x 22°
RAYPi20HTMB	200 to 2000 °C (392 to 3632 °F), 30° lens	30° x 22°
RAYPi20LTRC	-40°C to 500 °C (-40 to 932 °F), 45.2° lens	45.2° x 33.7°
RAYPi20HTRC	200°C to 2000 °C (392 to 3632 °F), 45.2° lens	45.2° x 33.7°

Accessories

Part Number	Item	Description
XXXPi20ENCAP	Protective enclosure (water-cooled/air purge)	IP65 Sealing, integrated water cooling 0 to 200 °C (32 to 392 °F). Includes air purge.
XXXPi20OENCAP	Outdoor Enclosure	For use in outdoor applications
XXXPi20PS1	Industrial Power Supply	DIN rail backplane mountable power supply to power a single camera as well as Analog and Digital I/O Modules
XXXPi206060	Digital Input/Relay Output Module	Ethernet based to provide (6) digital inputs and (6) relay outputs
XXXPi206024	Digital I/O and Analog Output Module	Ethernet based providing (2) digital inputs, (2) digital outputs and (2) analog outputs
XXXPi20MB	Mounting Bracket	Includes 1/4-20 holes for tripod mounting
XXXPi20PSC	Power Supply Cable 7.5 m (24 ft)	7.5 m (24 ft) Power supply cable
XXXPi20EC1	Ethernet Cable 7.5 m (24 ft)	7.5 m (24 ft) Straight Ethernet cable uses the following connectors: (1) IP67 RJ45 (camera) (1) IP20 RJ45 (PC or switch)
XXXPi20EC3	Ethernet Cable 25 m (82 ft)	25 m (82 ft) Straight Ethernet cable
XXXPi20ECC	Ethernet Crossover Adapter	Ethernet crossover adapter for direct connect to camera
XXXPi20MC	Fiber Optics Media Converter	Fiber optic to RJ45 Ethernet converter (Requires two for a set)
XXXPi20FO1	Fiber Optic Cable 150 m (492 ft)	150 m (492 ft) Fiber Optic patch cord
XXXPi20FO2	Fiber Optic Cable 300 m (984 ft)	300 m (984 ft) Fiber Optic patch cord
XXXPi20SC	Serial Cable	RS-232C Cable optional camera connection
XXXPi20SWH1	Ethernet Switch 5 Port 1 Gigabit	5 Port 1 Gigabit accessory used to allow I/O modules, camera, and PC to be connected on a single network
XXXPi20ECS	Ethernet Cable (short) for Junction Box	Ethernet cable to allow the I/O modules to easily be connected to switch inside Junction Box
XXXPi20CAB	Junction Box	DIN rail backplane designed to contain P/S, I/O modules, switch, etc. (These items must be ordered separately)
XXXPi20CC	Carrying Case	Carrying case designed to contain RAYPi20 camera and standard package components
XXXPI20DTPi	DataTemp Pi Software	PC based process control/monitoring software
XXXPi20SDK	Raytek SDK	LabView Based SDK (Software Development Kit) for ThermoView Pi20 camera
XXXPi20SDK1	Raytek C++ SDK	C++ Based SDK (Software Development Kit) for ThermoView Pi20 camera

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