

PRECISION OPTICAL TEMPERATURE MEASUREMENT & POWER CONTROL

PYROMETERS AND SCR POWER CONTROLLERS FOR TEMPERATURE-CRITICAL ENVIRONMENTS



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Constant and Precise Control

Precision optical temperature measurement and SCR power control for a wide variety of manufacturing processes

Temperature Measurement and Control for Advanced Thermal Processes

Advanced Energy[®] (AE) optical temperature measurement pyrometers and SCR power controllers enable constant and precise control of your demanding temperature-critical thermal processes. AE's pyrometers and power control devices are used around the worldin a wide variety of thermal and heat treatment processes. Typical applications include glass and plastics forming, steel forging, casting and extrusion of non-ferrous metals, and carbon fiber production and annealing, to name a few.

Thyro-Family SCR Power Controllers

No other SCR power controller series offers the flexibility and performance of Advanced Energy's Thyro-Family line. Our solutions meet your toughest design challenges. Thyro-Family SCR power controllers have a 50-year history, providing proven precision and reliability for any industrial manufacturing process requiring exacting material melting, heating, drying, or forming.

Impac[™] Line of Optical Temperature Pyrometers

In industrial markets, accurate temperature measurement is critical for process monitoring in each production step. Based on many years of experience from research and customer inside, Advanced Energy provides a broad pyrometer portfolio of infrared temperature measurement solutions for nearly every customer application.

Equipment for Monitoring and Controlling Thermal Processes

Advanced Energy's SCR power controllers, optical temperature pyrometers, and thermal imagers set the standard for thermal processing precision, repeatability, and reliability. When integrated into a closed-loop solution, our products deliver exact heat measurement and regulation.

Work with us to efficiently respond to changing regulatory and materials-traceability requirements, improve processes, and increase yield and throughput. We understand the intricacies of specific markets and exotic materials.

Thyro-Family of SCR Power Controllers

Setting the standard for SCR power controllers, Advanced Energy's Thyro-Family of SCR power controllers ensure high product quality and reproducibility with a wide range of supported operating voltages, multiple operating control modes, and superior interface options for the most demanding thermal applications. AE SCR power controllers can help reduce downtime through predictive analytics, improve energy consumption, and boost product quality. Features and benefits of the Thyro product line include:

- A compact footprint with DIN rail mountable design for space savings and simplified installation
- Precise regulation of power, including load management for optimal control and energy consumption
- Customizable faults, alarms, status, limits, and set points for easy integration to existing control systems
- Optimized load control with five control types and three operating modes for process efficiency
- 1, 2, and 3-Phase units, and supporting loads of up to 2900 A

Recommended applications for the Thyro-family are many. Some of the more common applications include:

- Automotive (paint drying equipment)
- Extruders and plastic processes

- Furnaces (industrial, diffusion, drying ovens)
- Glass (float, feeders, finishing equipment)
- Chemical (pipe trace heaters, pre-heating equipment)







Thyro-PX® Series

Setting the standard for SCR power controllers, the Thyro-PX is our most advanced high-performance SCR power controller with a wide range of supported operating voltages, multiple operating modes, and advanced interface options for the most demanding thermal applications. Thyro-PX supports loads up to 2900 A with an operating resolution of ±0.5%. The Thyro-PX features:

- Large 71.1 mm (2.8 in) LED graphic display with integrated process data recorder and SD card
- Suite of digital and analog I/O options, including optional fieldbus communications
- Integrated memory for error tracking and energy consumption analysis
- Mains load optimization with dynamic digital control and power monitoring
- Rated currents up to 2900 A and voltages to 690 V



Thyro-A+ Series

The Thyro-A+ is AE's latest addition of digital thyristor SCR power controller to offer comprehensive operating and control modes to save system costs for demanding applications. The Thyro-A supports loads up to 280 A and operating resolution of $\pm 1.5\%$. The Thyro-A+ features:

- Color display for intuitive control and process monitoring
- Increased measuring accuracy
- Fully digital communications with optional fieldbus communication options
- Rated currents up to 280 A and voltages to 500 V
- Onboard Modbus RTU fieldbus interface



PYROMETERS AND SCR POWER CONTROLLERS



Thyro-A® Series

Striking the perfect balance between price and performance, the Thyro-A is an outstanding value with flexible application capabilities, industry-proven reliability, and is ideally suited for a wide variety of general heating applications. A flexible digital thyristor SCR power controller, the Thyro-A supports loads up to 1500 A and operating resolution of ±3%. The Thyro-A features:

- Compact footprint with wide range of operating voltages and current ranges
- Multiple operating modes with optional mains load optimization feature
- Fully digital communications with optional fieldbus communication options
- Rated currents up to 1500 A and voltages to 600 V



Thyro-S® Thyristor Switch

Efficient yet powerful, the Thyro-S is AE's smallest-footprint digital thyristor switch that provides a comprehensive set of installation options and advanced functions. The Thyro-S is ideal for general heating applications and supports loads up to 350 A. The Thyro-S features:

- Compact footprint with wide range of operating voltages and current ranges
- Load monitoring, alarm relays, and power measurement
- Analog and digital communications with optional fieldbus communication options
- Rated currents up to 1500 A and voltages to 600 V



Temperature Measurement

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Impac offers precise optical temperature measurement for a wide variety of industrial processes





Impac Series of Optical Temperature Pyrometers

Focusing on the most demanding industrial applications, Advanced Energy's Impac series of infrared thermometers have been specifically developed to provide repeatable temperature measurement even in harsh environments for a wide range of industrial processes and applications.

Choose from single or multi-point (Impac Series 600) measurement options, different wavelengths and optics, multiple sighting options, all versions including our complimentary Measurement and Evaluation Software.

Typical industrial applications for our infrared pyrometers include:

- Quartz and sapphire growth and annealing
- Steel forging, finishing, and vessel monitoring
- Non-ferrous metals casting, forging, extrusion, induction heating, hardening, forging
- Thin-film solar glass, metals
- Carbon fiber production and annealing
- Technical ceramics heat-treatment, sintering

Impac Series 6 Advanced Pyrometers

The digital Impac[®] pyrometer Series 6 Advanced contains stationary pyrometers for fast infrared temperature measurement on metals, ceramics, or graphite. The series features integrated four-digit LED displays that indicate current measuring temperatures or set measuring distances. The pyrometers are equipped with a laser-targeting light, viewfinder, or TV camera module.



ISR 6

Advanced Energy's Impac ISR 6 Advanced is a digital, compact and fast two-color pyrometer for non-contact temperature measurement, this series covers a temperature ranges between 600 to 3000°C:

- Wide temperature ranges for flexible process adaptation
- "Dirty-window" warning function
- Four-digit LED display
- Fast response times
- High accuracy and repeatability



PYROMETERS AND SCR POWER CONTROLLERS



Impac Series 8 pro

Portable, digital pyrometers for non-contact temperature measurement in ranges of 250 to 2500°C. AE's battery-driven Impac Series 8 pro pyrometers offer wide temperature ranges and high accuracy. The series features Impac IS 8 pro, IGA 8 pro, and IS-8GS pro.

- Fully digital signal processing
- Integrated graphic display
- Bright, optimized viewfinder with exact spot indication
- Aluminum die-cast housing for harsh conditions
- Short response times and quick detection of temperature differences
- USB interface for using the optional analyzing software PortaWin



Impac IN 600

The Impac[®] Series 600 is a digital, modular pyrometer series with exchangable sensor heads for non-contact temperature measurement. This series provides a highly customizable design with easy installation and maintenance.

The multi-sensor capability offers a cost-effective solution, allowing up to 8 measurement points that interface to a central hub making it one of the most flexible and configurable options on the market today.

Modular, digital pyrometer for IR- temperature measurement of non-metallic or coated metallic objects between -40 to 700°C (-40 to 1292°F). Key benefits:

- Modular capabilities for field upgrades without calibration
- Configurable digital architecture with interface capabilities for remote data collection and analysis
- Designed for a wide range of applications including automotive, plastics, etc



PYROMETERS AND SCR POWER CONTROLLERS



Impac Series 140

The Impac Series represents accurate digital pyrometers with a variety of communication protocols and focusable optics.

AE's Impac[®] IS 140, IGA 140, and IGA 140/23 pyrometers provide precision non-contact temperature on metals, ceramics, graphite, in temperature ranges between 50 and 3500°C. They are set with switchable RS232 and RS485 serial interfaces.

- Small spot sizes
- Short response times
- Available with Ethernet, Profinet, and Profibus interfaces



Impac Series 320

Advanced Energy's Impac IS 320, IGA 320, and IGA 320/23 are short wavelength infrared thermometers for non-contact temperature measurement, temperature ranges between 75 to 2500°C.

They are used for measuring metallic surfaces, graphite, and ceramics, etc. Key benefits:

- Internal digital signal processing for high accuracy and long temperature ranges
- Small housing dimensions for easy installation in confined spaces
- High-quality optics for measurement of small objects
- Built-in LED target light for easy alignment to the measuring object
- Digital RS 485 interface to securely transmit data to a PC or a PLC over long distances
- Digital RS 232 or RS 485 interface



Quality and Precision Calibration Sourcess

Advanced Energy's precise Mikron[®] calibration sources are traceable to national standards. We use tests, burn-in times, and pyrometric calibrations to help ensure our black bodies deliver the higest quality and reliability standards.



Mikron IRC Series

Advanced Energy's Mikron IRC calibration sources are small and easy to use low temperature calibration sources with fixed temperature options from 35 to 150°C. They're ideal for benches and multiple, fixed temperature calibration set points. They're ideal for benches and multiple, fixed temperature calibration set points.

Product Highlights:

- Minimum temperature deviation provides excellent temperature uniformity
- Ten different types offer fixed temperature options from 35 to 150°C
- High emissivity: 98%
- Large aperture diameter: 50.8 mm (2 in)

Rockwell Automation Encompass Partner

AE Impac series optical temperature pyrometers and Thyro-Family SCR power controllers include Rockwell Automation Add-On Profiles (AOPs) for quick and easy installation to Rockwell Automation systems. AOPs are custom software wizards that allow quick and easy configuration of thirdparty devices to communicate with Rockwell Automation control systems.

Advanced Energy worked closely with Rockwell Automation to develop custom features that enable our customers to quickly integrate optical temperature pyrometers into their new and existing thermal processes.

AE has been an Encompass Partner with Rockwell Automation since 2014, and both product lines are an integral part of implementing closed-loop control for critical thermal processes in a wide range of industrial markets.



Encompass™ Product Partner

A ROCKWELL AUTOMATION PARTNER





ABOUT ADVANCED ENERGY

Advanced Energy has devoted more than three decades to perfecting power for its global customers. We design and manufacture highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

Our products enable customer innovation in complex applications for a wide range of industries including semiconductor equipment, industrial, manufacturing, telecommunications, data center computing, and medical.

With deep applications know-how and responsive service and support across the globe, we build collaborative partnerships to meet rapid technological developments, propel growth for our customers, and innovate the future of power.

PRECISION | POWER | PERFORMANCE

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