THYRO-FAMILY SCR POWER CONTROLLERS

THYRO-S®
THYRO-A®
THYRO-AX®
THYRO-PX™

Advanced Energy®

Leading Technology **Proven Solution**

Thyro-Family Digital 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.

Applications

- Industrial furnaces
- Automotive
- Chemical and oil
- Coatings
- Crystal growing
- Glass manufacturing
- IR drying
- Machine building
- Packaging
- Painting machines and printers
- Semiconductor
- Carbon fibers
- Deposition equipment
- Metals
- R&D
- Solar and renewable energy
- Vibratory/material handling

Thyro-Family SCR power controllers ensure high product quality and reproducibility in applications ranging from simple to complex. With a 50-year history, their precision and reliability is proven for any industrial manufacturing process requiring exacting material melting, heating, drying, or forming.

COMPREHENSIVE CONNECTIVITY AND PERFORMANCE OPTIONS ENABLE OPTIMIZATION AND SAVINGS FOR:

- Process control
- Process documentation
- Installation and commissioning
- System availability

CERTIFICATES AND COMPLIANCE

- Quality standard to DIN EN ISO 9001
- Certification to UL 508[1]
- SCCR, according with UL 508A (100 kA short circuit test)[1]
- Canadian National Standard[1]
- CE
- RoHS 5/6
- Secure separation between power and control section
- Integrated semiconductor fuses

1 Individual product types are excluded.

THYRO-S®

Thyristor Switch, 8 to 350 A

- Resistive and transformer loads
- Wear-free operation
- Compact design
- Channel separation
- Easy handing and connection
- USB interface

SUMMARY SPECIFICATIONS			
Thyro-S Model	**1S**	**2S**	**3S**
Rated Voltage	230 V, 400 V, 500 V	400 V, 500 V	400 V, 500 V
Rated Current	Up to 350 A		
V_{Mains}	Up to 0.43 x V_{nom}		
Frequency	47 to 63 Hz		
Communication	› Standard system interface › Optional bus connection › Thyro-Tool PC software via USB interface		
Control Input with 24 VDC	> 3 V = ON		
Connection (Bus Options via Bus Module)	Ethernet/IP®, Profibus® DPV1, Modbus® RTU, Modbus® TCP/IP, DeviceNet™, CANopen®, Profinet®		
Additional Options			
Thyro-S Option	**H 3**	**H RLP3**	
Features		› Load circuit monitoring › Current measurement › External 24 VDC supply › Alarm relay	

THYRO-A®

SCR Power Controller, 8 to 1500 A

- Resistive and transformer loads
  - Soft-start function for transformer loads
- Channel separation
- Mains load optimization
- USB interface

SUMMARY SPECIFICATIONS

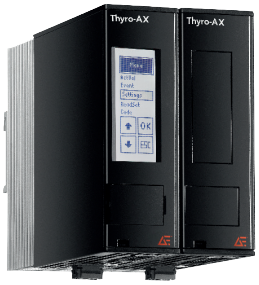
Thyro-A Model	1A	2A	3A
Rated Voltage	230 V, 400 V, 500 V, 600 V	400 V, 500 V, 600 V	400 V, 500 V, 600 V
Rated Current	Up to 1500 A		
V_{Mains}	Up to 0.43 x V_{nom}		
Frequency	47 to 63 Hz		
Phase	For 1-phase load between 2-phase or phase against neutral	For 3-phase economic circuits (delta connection or star connection without neutral)	For 3-phase load (star connection without neutral, star connection with neutral, delta connection, or open delta)
Communication	› Standard system interface › Optional bus connection › Thyro-Tool PC software via USB interface		
Set Point Settings	› Analog input: 0(4)-20 mA, 0(1)-5 V, 0(2)-10 V › Digital via bus system or Thyro-Tool PC software		
Operating Modes	› TAKT: Full frequency package control › VAR: Phase-angle › QTM: Half-wave frequency package control › VT: VAR and TAKT combined modes (on request) › SWITCH: Switch control	› TAKT: Full frequency package control › SWITCH: Switch control	› TAKT: Full frequency package control › VAR: Phase-angle › SWITCH: Switch control
Connection (Bus Options via Bus Module)	Ethernet/IP®, Profibus® DPV1, Modbus® RTU, Modbus® TCP/IP, DeviceNet™, CANopen®, Profinet®, Thyro-Tool PC software, Thyro-Power Manager for mains load optimization of multiple Thyro-A units		

Additional Options

Thyro-A Option	H 3	H RL3	H RLP3
Features	› Control types V, V^2	› Control types V, V^2, I, I^2 › Load circuit monitoring › External 24 VDC/VAC supply › Alarm relay › R_{warm}/R_{cold} up to ≤ 6 › Analog output 10 V/20 mA	› Control types V, V^2, I, I^2, P › Load circuit monitoring › External 24 VDC/VAC supply › Alarm relay › R_{warm}/R_{cold} up to ≤ 6 › Analog output 10 V/20 mA › Power indication at analog output

THYRO-AX®

SCR Power Controller, 16 to 1500 A



- Resistive and transformer loads
- Flexible connection technology
- USB 2.0 interface

SUMMARY SPECIFICATIONS

Thyro-AX Model	1A	2A	3A
Rated Voltage	24 to 600 V		
Rated Current	16 to 1500 A		
Mains Load Optimization	Internal for QTM and TAKT operating modes External via Thyro-Power Manager connection		
Frequency	47 to 63 Hz		
Phase	For 1-phase load between 2-phase or phase against neutral	For 3-phase economic circuits (delta connection or star connection without neutral)	For 3 phase load (star connection without neutral, star connection with neutral, delta connection or open delta)
Communication	› Standard system interface › Optional bus connection › Connection to Thyro-Tool Pro PC software		
Set Point Settings	› 2 analog inputs, switchable: 0(4)-20 mA, 0(1)-5 V, 0(2)-10 V › Digital via bus system or Thyro-Tool Pro PC software		
Operating Modes	› TAKT: Full frequency package control › VAR: Phase-angle › QTM: Half-wave frequency package control › SWITCH: Switch control	› TAKT: Full frequency package control › SWITCH: Switch control	› TAKT: Full frequency package control › VAR: Phase-angle › SWITCH: Switch control
Connection (Bus Options via Bus Module)	Ethernet/IP®, Profibus® DPV1, Modbus® RTU, Modbus® TCP/IP, DeviceNet™, CANopen®, Profinet®, Internal USB and Ethernet for connection to Thyro-Tool Pro software, Thyro-Power Manager for network load optimization of multiple Thyro-AX units		

Additional Options

Thyro-AX	H RLP2
Features	› Control types V, V^2, I, I^2, P › Load circuit monitoring › External 85 to 265 V supply (47 to 63 Hz) › R_{warm}/R_{cold} up to ≤ 6 › Power indication at analog output › Graphic user interface via display and relay output (exchanger, status signals adjustable) › Analog output O/2-10 V, 0/4-20 mA

THYRO-PX®

SCR Power Controller, 16 to 2900 A

- Resistive and transformer loads
  - Soft-start function for transformer loads
- Loads with high R_{warm}/R_{cold} up to factor 20 (MOSI starting mode)
- Menu-driven graphic user interface
  - Load circuit monitoring
  - External 185 to 550 VAC supply (45 to 65 Hz)

SUMMARY SPECIFICATIONS			
Thyro-PX Model	**1PX**	**2PX**	**3PX**
Rated Voltage	230 to 500 V and 690 V within 184 to 759 V		
Rated Current	Up to 2900 A		
Mains Load Optimization	Optional dASM interface card for mains load optimization; functionality includes fully digital dASM operation in TAKT operating mode.		
Frequency	47 to 63 Hz		
Phase	1, 2, or 3		
Control Types	V, V^2, I, I^2, P		
Set Point Settings	› Up to three analog inputs: 0(4)-20 mA, 0(1)-5 V, 0(2)-10 V › Digital via Anybus modules, Thyro-Touch display, or Thyro-Tool Pro PC software (USB) › Optional I/O cards		
Connection (Bus Options via Anybus Module)	Ethernet/IP®, Profibus® DPV1, Modbus® RTU, Modbus® TCP/IP, DeviceNet™, Profinet®, EtherCAT®		
Additional Options			
Thyro-PX			
Options	› Digital I/O cards: Easy addition of inputs and outputs or connections for your specific requirements › Thyro-Tool Pro PC software: Commissioning, visualization, and diagnosis of Thyro-AX and Thyro-PX units › dASM: Digital and dynamic working mains load optimation synchronization of multiple power controllers; suitable for Thyro-PX series › Thyro-Touch kit for cabinet door or panel installation		
Thyro-Touch Display	› Integrated process data recording › Easy operation via touch display › Switchable display to bar chart, line chart, actual values, or data logger › Integrated SD card to load or save data › Process data recorder of up to six parameters as well as status messages › Analysis via Thyro-Touch tool on PC › EasyStart feature for easy commissioning of Thyro-PX with basic settings › Languages: German, English (additional options on request)		

THYRO-FAMILY OPTIONS

Software	
Thyro-Tool Pro	Tailored PC software for commissioning, visualization, and diagnosis of Thyro-AX and Thyro-PX SCR power controllers: › Easy connection via USB interface › Individual analysis for each connected Thyro-AX and Thyro-PX (system driven via IP address) › Actual value › Set points › Line charts › Parameter analysis › Simultaneous presentation of process data of several power controllers
Thyro-Tool Family	PC software for Thyro-S and Thyro-A SCR power controllers: › Comparison of parameter sets › Display of set points and actual value › Line charts of process data (optional printing) › Bar chart › Simultaneous presentation of process data of several power controllers
Communication	
Bus Protocols	Available for: › Thyro-A, Thyro-AX, and Thyro-S bus modules › Thyro-PX Anybus modules Protocols: › Ethernet/IP® › Profibus® DPV1 › Modbus® RTU › DeviceNet™ › CANopen® › PROFINET® › Modbus® TCP › EtherCAT®
Bus Modules for Thyro-S, Thyro-A, and Thyro-AX	› Optional connection of up to eight power controllers › Only one address required per bus module › Access to power controller set points, actual points, and parameters › Transfer of set points as float number in physical units › Function control via LEDs › Voltage supply: 24 VDC, 150 mA

THYRO-POWER MANAGER

The Thyro-Power Manager is an additional device for static mains load optimization of a multiple actuator configuration of up to ten power controllers in full frequency package control (TAKT) operating mode.

In addition, the Thyro-Power Manager can be used for tasks such as monitoring of system load peaks, data logging, and data monitoring. It also can function as an E/A component.

By reducing load peaks and system perturbations, the Thyro-Power Manager makes operating costs more predictable.

KEY FEATURES

- Easy operation via switch and potentiometer, or via software tool
- Connectivity to fieldbus
- Voltage supply 110 V/230 V; 50 Hz/60 Hz
- Error and alarm output
- Measurement
  - Load and energy consumption
  - Mains voltage
  - Temperature
- Integrated hours counter

Advanced Energy®

For international contact information, visit advanced-energy.com.

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