THYRO-FAMILY SCR POWER CONTROLLERS

THYRO-S®
THYRO-A®
THYRO-AX®
THYRO-PX™

Advanced Energy

THYRO-FAMILY DIGITAL SCR POWER CONTROLLERS

LEADING TECHNOLOGY, PROVEN SOLUTIONS

No other SCR power controller series offers the flexibility and performance of the Advanced Energy® Thyro-Family line. Our solutions meet your toughest design challenges.

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

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

CERTIFICATES AND COMPLIANCE

› Quality standard to DIN EN ISO 9001
› Certification to UL 508
› SCCR, according with UL 508A (100 kA short circuit test)

› Canadian National Standard
› CE
› RoHS 5/6

› Secure separation between power and control section
› Integrated semiconductor fuses

THYRO-S®

THYRISTOR SWITCH, 16 TO 280 A

Thyro-S

- › Resistive loads
- › Wear-free operation
- › Compact design
- › Easy handing and connection

SUMMARY SPECIFICATIONS

Thyro-S Model	
Rated Voltage	230, 400, 500 V
Rated Current	Up to 280 A
V$_{Mains}$	Up to 0.43 x V$_{nom}$
Frequency	47 to 63 Hz
Three-Phase System	Possible by connecting two Thyro-S units
Communication	Standard system interface
	Optional bus connection
	Connection to PC software (Thyro-Tool Family)
Control Input with 24 VDC	> 3 V = ON
Operating Modes	1:1, 1:2, 1:3, 1:5
Bus Options (via Bus Module)	Ethernet/IP®, Modbus® RTU, Modbus® TCP/IP, DeviceNet™, CANopen®, Profinet®, Thyro-Tool Family

ADDITIONAL OPTIONS

Thyro-S Option	H RL1
Features	Load circuit monitoring
	Current measurement
	External 24 VDC supply
	Alarm relay

THYRO-A®

SCR POWER CONTROLLER, 8 TO 1500 A

Thyro-A 1A

Thyro-A 2A

Thyro-A 3A

› Resistive and transformer loads

· Soft-start function for transformer loads

› Channel separation

› Mains load optimization

SUMMARY SPECIFICATIONS

Thyro-A Model	1A	2A	3A
Rated Voltage	230, 400, 500, 600 V	400, 500, 600 V	400, 500, 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		
	Connection to PC software		
Set Point Settings	Analog input: 0(4) to 20 mA, 0(1) to 5 V, 0(2) to 10 V		
	Digital via bus system or PC software		
Operating Modes	TAKT: Full frequency package control	TAKT: Full frequency package control	TAKT: Full frequency package control
	VAR: Phase-angle		VAR: Phase-angle
	QTM: Half-wave frequency package control		VT: VAR and TAKT combined modes (on request)
	VT: VAR and TAKT combined modes (on request)		
Bus Options (via Bus Module)	Ethernet/IP®, Profibus® DPV1, Modbus® RTU, Modbus® TCP/IP, DeviceNet™, CANopen®, Profinet®, Thyro-Tool Family, Thyro-Power Manager for mains load optimization of multiple Thyro-A units		

ADDITIONAL OPTIONS

Thyro-A Option	H 1	H RL1	H RLP1
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

Thyro-AX 1A

Thyro-AX 2A

Thyro-AX 3A

› 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) to 20 mA, 0(1) to 5 V, 0(2) to 10 V		
	Digital via bus system or Thyro-Tool Pro PC software		
Operating Modes	TAKT: Full frequency package control	TAKT: Full frequency package control	TAKT: Full frequency package control
	VAR: Phase-angle	SWITCH: Switch control	VAR: Phase-angle
	QTM: Half-wave frequency package control		SWITCH: Switch control
	SWITCH: Switch control		
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 Option	H RLP2
Features	› Control types V, V², I, I², P › Load circuit monitoring › External 85 to 165 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 to 10 V, 0/4 to 20 mA

THYRO-PX®

SCR POWER CONTROLLER, 16 TO 2900 A

Thyro-PX 1PX

Thyro-PX 3PX

Thyro-Touch Display

› 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	1PX VSC
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: Mains load optimization functionality includes fully digital dASM operation in TAKT operating mode.			Primary or secondary voltage sequence control (VSC) for thermal applications with high dynamic specifications (operating mode VAR_VSC)
Frequency	47 to 63 Hz			
Phase	1, 2, or 3			
Control Types	V, V², I, I², P			
Set Point Settings	Up to 3 analog input: 0(4) to 20 mA, 0(1) to 5 V, 0(2) to 10 V			
	Digital via Anybus modules, Thyro-Touch display, or Thyro-Tool Pro PC software (USB)			
	Optional I/O cards			
Bus Options (via Anybus modules)	Ethernet/IP®, Profibus® DPV1, Modbus® RTU, Modbus® TCP/IP, DeviceNet™, Profinet®, EtherCAT®			

ADDITIONAL OPTIONS

Thyro-PX

| Options	› Digital I/O cards: Easily add 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 UNIT

› Integrated process data recording

› Easy operation via touch display

THYRO-TOUCH UNIT

| Features	› 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 6 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 (further on request)

OPTIONS
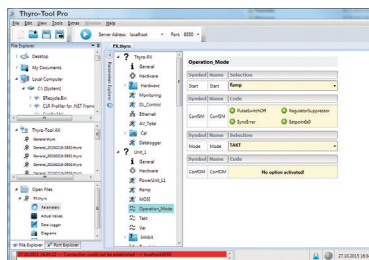
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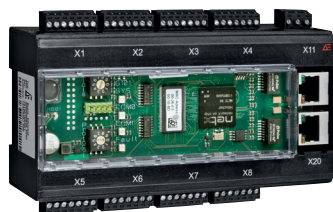
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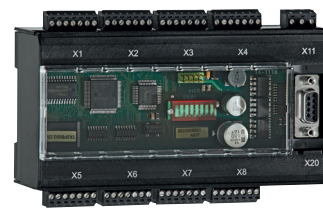
Thyro-Power Manager

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**	› Ethernet/IP® › Profibus® DPV1 › Modbus® RTU › DeviceNet™ › CANopen® › PROFINET® › Modbus® TCP › EtherCAT

Bus Modules

Key features for Thyro-S, Thyro-A, and Thyro-AX bus modules	› Optional connection of up to 8 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 › Control of Thyro-S via digital set points (according to OFF, 1/5, 1/3, 1/2, ON) › 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 10 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, and as an E/A component.

By reducing load peaks and system perturbations, a primary challenge of any application the Thyro-Power Manager increases operating cost predictability.

KEY FEATURES

› Easy handling per switch and potentiometer, alternative per software tool

› Possibility of connection to fieldbus

› Voltage supply 110/230 V; 50/60 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.