Advanced Energy®

THYRO-AX®

DIGITAL THYRISTOR SCR POWER CONTROLLERS
16 TO 1500 A

Thyro-AX®

Digital thyristor SCR power controllers

With numerous new performance features, flexible and reliable handling, and an integrated touch display, the Thyro-AX® SCR power controller delivers the superior performance standards of Advanced Energy®'s Thyro-Family products.

Thyro-AX® products precisely and reliably control power in a range of industrial processes requiring heating, melting, forming, or drying.

APPLICATIONS
Automotive (paint drying equipment)
Chemical (pipe trace heaters, pre-heating equipment)
Crystal growing (sapphire, silicon)
Furnace construction (industrial, diffusion, drying ovens)
Glass (plate glass equipment, feeders, finishing equipment)
Machine building (extruders, plastic presses)
Packaging (shrink tunnels)
Printing machines (IR drying)

WIDE PERFORMANCE SCOPE

The Thyro-AX series supports voltages from 24 to 600 V and currents from 16 to 1500 A, and offers single, dual, and three-phase units. With flexible connection technology, the power controller can be connected from below and/or from above.

ADVANCED COMMUNICATION AND CONTROL

The full graphic touch display enables intuitive operation and offers advanced visualization and parameterization options. It displays set points, actual values, operating modes, and other parameters in plain text, and also indicates operating mode with background lighting.

In addition to standard interfaces, Thyro-AX modules offer Ethernet and USB 2.0. Parameterization via USB 2.0 is possible without external supply.

For communication with higher control systems, bus modules are available for protocols such as DeviceNet™, Modbus® RTU, PROFIBUS®, and CANopen®, as well as for TCP/IP based communication, including PROFINET®, Modbus® TCP, and EtherNet/IP®.

MAINS LOAD OPTIMIZATION

Intelligent technologies compensate for system perturbations and reduce costs.

STANDARD

- Internal mains load optimization for up to 12 power controllers

OPTIONAL

- Thyro-Power Manager
- dASM bus module

HIGH EFFICIENCY

The high efficiency of entire Thyro-Family offers ongoing energy savings.

SUMMARY SPECIFICATIONS

THYRO-AX SERIES		
Operating Modes		
TAKT	Full frequency package control	
VAR (phase-angle firing)	Firing of each sinus half-wave	
QTM (half-wave frequency package control)	Quick operating mode for ohmic load without a transformer	
SWITCH (full-wave frequency)	Switch operating mode, also for transformer load	
Thyro-AX Model Features		
1A...	1-phase version for 1-phase load between 2-phases or for 1-phase connected to the neutral phase	
	Operating modes: TAKT, VAR, QTM, SWITCH	
2A...	2-phase version for 3-phase load in cost-saving 3-phase circuit	
	Operating modes: TAKT, SWITCH	
3A...	3-phase version for 3-phase load	
	Operating modes: TAKT, VAR, SWITCH	
Rated Voltage		
230 V	24 to 253 V	
400 V	24 to 440 V	
500 V	24 to 550 V	
600 V	24 to 660 V	
Network Frequency	For all types from 47 to 63 Hz max.	
	Frequency change: 5% per half-wave	
Rated Current		
...-xxx...	16 A, 30 A, 45 A, 60 A, 100 A, 130 A, 170 A, 230 A, 280 A, 350 A, 1000 A, 1400 A, 1500 A	
Load Types		
Types	Ohmic loads employed at a R_{warm}/R_{cold}-ratio up to 6; limitation of 3 x I_{nom}	
	Transformer loads	
Mains Load	Internal network load optimization for the operating modes QTM and TAKT	
	Interface for external network load optimization available, e.g. Thyro-Power Manager	
Functional Features		
...F...	Forced ventilation	
...H RLP2	Set point inputs	2 set point inputs, 2 digital inputs and 1 switch input
		Input of analog set point, signal intervals, each of: 0(4) - 20 mA / 0(1) - 5 V / 0(2) - 10 V
		Control input for switch operation mode - dual point control is possible (U_{On} = 3 to 24 V)
		Digital set point is provided by the process computer or bus system
	Control types	U_{eff} / U^2_{eff} / I_{eff} / I^2_{eff} / P
	Load monitoring	Via an adjustable response threshold
	Limitations	Current limitation I_{eff} current peak limitation to $\hat{I}$ = 3 x I_{nom} for operation mode VAR
	Relay output	Exchanger, max. contact load 250 V, 4 A, 180 W, 1500 VA
	Analog output	3 analog outputs each with signal levels of 0(2) - 10 V / 0(4) - 20 mA, max. compliance voltage 10 V
	External supply	85 to 265 V (47 to 63 Hz)
	Operational display	Via display and relay output (exchanger, indications adjustable)
System Interface	Serial system interface for connection of optional bus module, e.g. for CANopen®, DeviceNet™, EtherNet/IP®, Modbus® RTU, Modbus® TCP, Profinet®, Profibus® DPV1	

SUMMARY SPECIFICATIONS: THYRO-AX

Current (A)	Power (kW) 230 V	400 V	500 V	600 V	Power Loss (W)
THYRO-AX 1A ...H RLP2					
16	3	6	8		25
30	7	12	15		40
45	10	18	22		51
45				27	61
60	14	24	30		66
60				36	72
100	23	40	50		116
100				60	130
130	30	52	65		159
130				78	182
170	39	68	85		180
170				102	211
230	53	92	115		280
240				138	332
280	64	112	140	168	352
350	80	140	175	210	399
1000		400			1317
1000			500	600	1401
1400			700	840	1721
1500		600			1761

Current (A)	Power (kW) 400 V	500 V	600 V	Power Loss (W)
THYRO-AX 2A ...H RLP2				
16	11	14		49
30	21	26		80
45	31	39		101
45			47	121
60	41	52		131
60			62	144
100	69	86		231
100			104	260
130	90	112		318
130			135	368
170	117	147		360
170			176	422
230	159	199		600
240			239	664
280	194	242		702
350	242	303	363	79
1000	693			2654
1000		866	1039	2822
1400		1212	1455	3462
1500	1039			3542

Current (A)	Power (kW) 400 V	500 V	600 V	Power Loss (W)
THYRO-AX 3A ...H RLP2				
16	11	14		73
30	21	26		121
45	31	39		151
45			47	182
60	41	52		197
60			62	216
100	69	86		346
100			104	390
130	90	112		475
130			135	544
170	118	147		540
170			176	632
230	159	199		840
240			239	995
280	194	242	291	1054
350	242	303	363	1194
1000	693			3891
1000		866	1039	4143
1400		1212	1455	5102
1500	1040			5223

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