

Control your Power

Thyro-A

Thyristor Power Controller (SCR)

Safe, fast, economical, and communication enabled

Owing to high-capacity digital technology, the new communication enabled Thyristor Power Controller Thyro-A allows for precise energy dosing at a high level of availability.

Heating - Melting - Forming

Highly flexible for interfacing the load and power supply side, the range of applications for Thyro-A has expanded significantly. For standard processes, adjustments can be made on the unit, which facilitate handling and speed up commissioning.

Owing to an interface option at the automation level, many further functions can also be used. All measurement, status, and set points may be processed via SPS or the process computer. Of course, stand-alone operations or the direct combination with process controls are still possible.

Thyro-A power controllers are thus excellently suited for application in numerous fields within the scope of process engineering technology, for example:

- Ovens (industrial, diffusion, drying)
- Glass processing (plate glass equipment, feeders, finishing equipment, fiber glass)
- Plant equipment (extruders, plastic presses)
- Chemical industry (pipe trace heaters, pre-heating equipment),
- Automotive industry (paint drying equipment),
- Printing machines (IR drying),
- Packaging industry (shrink tunnels).



Key Features

Besides free-from-wear operations and high performance, this product series offers the following features:

- Simple handling requiring little space
- Rated voltages up to 500V
- Rated currents up to 350A
- Single, dual, and three-phase versions (Dual-phase version for three-phase load without deploying the neutral conductor in a cost-saving three-phase circuit)
- Integrated semi-conductor fuses
- LED status indicators

Automation Level

- Series-design system interface for connection to an optimal bus module (Profibus DPV1, Modbus RTU, DeviceNet, CANopen,...) for the processing of set points and actual values, as well as for status reports
- Interface option for connection to PC software Thyro-Tool Family
- Safe separation of control and power units

Analog Controlling

- Analog set point between 0..10V / 0..20mA
- Control characteristic is adjustable within this interval
- Voltage range at the dual point controller: OFF = 0..3V, ON = 3..24V

Load Side

- High resistance against short-circuit currents and blocking voltage accommodated by the power semi-conductors
- Designed for ohmic load, as well as for inductive mixed load
- Fit for transformer-type load due to an integrated soft-start function, phase-angle firing of the first half-wave and channel separation
- Optimized load control due to the implementation of up to 5 control types and 3 operating modes

Power Supply Side

- Network voltages of up to $0.43 \times U_{nom}$
- Frequency range 47-63 Hz
- Internal network load optimization in the operating modes TAKT and QTM
- Optional external network load optimization (Thyro-Power Manager Module)

Other Features

- Quality standard met in accordance with ISO 9001
- Approval in accordance with UL 508
- S.C.C.R. certified in accordance with UL 508A (100 kA short-circuit test)
- Canadian National Standard
- CE Conformity
- RoHS Conformity 5/6



Thyro-Power Manager



Thyro-Tool Family

Specification – type series and technical data (excerpt)

Operating modes	TAKT, full frequency package control	frequency package control	
	VAR, phase angle	firing of each sinus half-wave	
	QTM, half-wave frequency package control	quick operating mode for ohmic load without a transformer	
Thyro-A	1A...	Single phase version, for single phase load between dual phases, or for a single phase connected to the neutral phase	
		Operating modes: TAKT, VAR, QTM	
	2A...	Dual phase version, for three phase load implemented within a cost-saving three phase circuit configuration	
		Operating mode: TAKT	
	3A...	Three phase version, for three phase load	
		Operating modes: TAKT, VAR	
Rated voltage ...H1	...230... 230 V - 57 % + 10 %		
	...400... 400 V - 57 % + 10 %		
	...500... 500 V - 57 % + 10 %		
Rated voltage ...H RL1 und H RLP	...230... 230 V - 15 % + 10 %	230 V - 57 % together with 24 V input	
	...400... 400 V - 15 % + 10 %	400 V - 57 % together with 24 V input	
	...500... 500 V - 15 % + 10 %	500 V - 57 % together with 24 V input	
	Network frequency	of all types ranging from 47 Hz 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, 280 A, 350 A	
	Load type	Ohmic load	
	Network load	Optimization via 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	
		Setpoint inputs	2 setpoint inputs, separated safely (SELV, PELV) from the mains
			Input of analog setpoint, signal intervals: 0(4) - 20 mA / 0(1) - 5 V / 0(2) - 10 V
			Control input for switch operation mode - dual-point control is possible ($U_{On} = 3-24\text{ V}$)
			The digital setpoint is provided by the process computer or bus system
	...H 1	Control types	U_{eff}, U_{eff}^2
	...H RL1	Functional features	such as ...H 1, yet additionally
		Control types	$U_{eff}, U_{eff}^2, I_{eff}, I_{eff}^2$
		Load monitoring	via an adjustable response threshold
		Limitations	Current limitation I_{eff}, \hat{I} in VAR mode, current peak limitation to $\hat{I} = 3 \times I_{nom}$
		Relay output	of exchanger, max. contact load 250 V, 6 A, 180 W, 1500 VA
		Analog output	Signal level 0(2)-10 Volt / 0(4)-20 mA, maximum compliance voltage 10 V capable to be used as help for adjustment purposes
		External supply	24 V DC/AC, connected only upon demand
		Load types	for ohmic load employed at a R_{warm}/R_{cold} ratio of up to 6 (only deployed for H RL1 and H RLP) Limitation to $\hat{I} = 3 \times I_{nom}$ (for H RL1 and H RLP in VAR mode)
		Operational display	via LEDs and relay outputs (exchanger, indications adjustable)
...H RLP	Functional features	such as ... H RL1, yet additionally	
	Control types	$U_{eff}, U_{eff}^2, I_{eff}, I_{eff}^2, P$	
System interface	Optional bus module for Profibus DP, Modbus RTU, CANopen, DeviceNet, ...		
	For interfacing the PC software of the Thyro-Tool Family via a PC adaptor		
Examples regarding the type key	Thyro-A 2A 400-170 HRLP1		
	2A = dual phase version for three phase load implemented within a cost-saving three phase circuit configuration, 400 = 400 V rated voltage		
	170 = 170 A rated current, H = semi-conductor fuse, R = failure indicator relay		
	L = load monitoring + analog output, P = Power control + display, 1 = actual series		

Specification – type series and technical data (excerpt)

THYRO-A 1A
H1, HRL1, HRLP



Single phase power controller

...H1 ...HRL1 ...HRLP	Current (A)	Unit rating (kVA)			Power loss (W)	Dimensions (mm)			Weight (kg) approx.
		230 V	400 V	500 V		W	H	D	
	16	3.7	6.4	8	30	45	121	127	0.7
	30	6.9	12	15	47	45	121	127	0.7
	45	10	18	22.5	48	52	190	182	1.7
	60	14	24	30	80	52	190	182	1.7
	100	23	40	50	105	75	190	190	1.9
	130	30	52	65	150	125	320	237	4
	170	39	68	85	210	125	320	237	4
..F.	280	64	112	140	330	125	370	237	5
..F.	350	80	140	175	390	125	400	261	8.4

THYRO-A 2A
H1, HRL1, HRLP



Dual phase power controller for three phase loads implemented within a cost-saving three phase circuit configuration

...H1 ...HRL1 ...HRLP	Current (A)	Unit rating (kVA)			Power loss (W)	Dimensions (mm)			Weight (kg) approx.
		230 V	400 V	500 V		W	H	D	
	16	-	11	14	60	90	121	127	1.4
	30	-	21	26	94	90	121	127	1.4
	45	-	31	39	96	104	190	182	3.4
	60	-	42	52	160	104	190	182	3.4
	100	-	69	87	210	150	190	190	3.8
	130	-	90	112	300	250	320	237	8
	170	-	118	147	420	250	320	237	8
..F.	280	-	194	242	660	250	370	237	11
..F.	350	-	242	303	780	250	430	261	16.7

THYRO-A 3A
H1, HRL1, HRLP



Three phase power controller

...H1 ...HRL1 ...HRLP	Current (A)	Unit rating (kVA)			Power loss (W)	Dimensions (mm)			Weight (kg) approx.
		230 V	400 V	500 V		W	H	D	
	16	-	11	14	90	135	131.6	127	2.1
	30	-	21	26	141	135	131.6	127	2.1
	45	-	31	39	144	156	190	182	5.1
	60	-	42	52	240	156	190	182	5.1
	100	-	69	87	315	225	190	190	5.7
	130	-	90	112	450	375	320	241	12
	170	-	118	147	630	375	320	241	12
..F.	280	-	194	242	990	375	397	241	15
..F.	350	-	242	303	1170	375	430	261	25.5

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