Control your Power

Thyro-A

Thyristor Power Controller (SCR) up to 1,500 A

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 600 V
- Rated currents up to 1,500 A
- 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 optional bus module (Profibus DPV1, Modbus RTU, DeviceNet, CANopen, ProfiNet. Projected: ModBus TCP/IP, Ethernet IP) 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

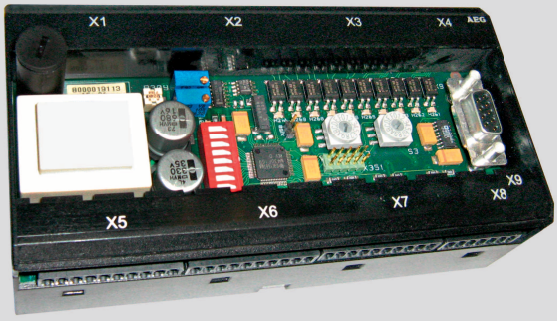
- High resistance against short-circuit currents and blocking voltage accommodated by the power semi-conductors
- Designed for ohmic load, as well as for inductive mixed load
- Fit for transformer-type load due to an integrated soft-start function, phase-angle firing of the first half-wave and channel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

Power Supply Side

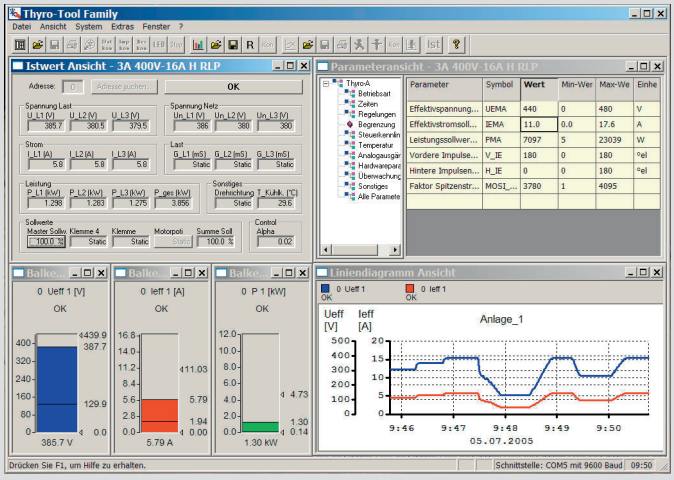
- Network voltages of up to 0.43 x U_{nom}
- Frequency range 47-63 Hz
- Internal network load optimization in the operating modes TAKT and QTM
- Optional external network load optimization (Thyro-Power Manager Module)

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, accredited 16 A to 350 A, projected 495 A to 1,500 A)
- Canadian National Standard
- CE Conformity
- GOST
- 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 in cost-saving three-phase circuit	
		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 and H RLP1	...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
	...600...	600 V - 15 % + 10 % 600 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, 495 A, 650 A, 1.000 A, 1.400 A, 1.500 A
	Load Type	**Load types for ohmic load employed at a R_{warm}/R_{cold} ratio of up to 6; Transformerload**
	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 V)
			The digital setpoint is provided by the process computer or bus system
	...H 1	control types	U_{eff}, U^2_{eff}
	...H RL1	functional features	such as ...H 1, yet additionally
		Control types	U_{eff}, U^2_{eff}, I_{eff}, I^2_{eff}
		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	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, can also be used as adjustment aid
		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 RLP1	functional features	such as ... H RL1, however, additionally
		control types	U_{eff}, U^2_{eff}, I_{eff}, I^2_{eff}, P

System interface	Optional bus module for Profibus DPV1, Modbus RTU, DeviceNet, CANopen, ProfiNet. Projected: ModBus TCP/IP, Ethernet IP.
	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 in cost-saving three-phase circuit, 400 = 400 V rated voltage
	170 = 170 A rated current, H = semi-conductor fuse, R = failure indicator relay
	L = load monitoring + analog output, P = performance control display, 1 = actual series

Specification – type series and technical data (excerpt)

THYRO-A 1A
H1(*), HRL1, HRLP1

Single-phase power controller

...H1 ...HRL1 ...HRLP1	Current (A)	Unit rating (kVA) 230 V	400 V	500 V	600 V	Power loss (W)	Dimensions (mm) W	H	D	Weight (kg) approx.
	16	3,7	6,4	8	-	30	45	131	127	0,7
	30	6,9	12	15	-	47	45	131	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
..F..	495	-	198	274	297	556	112	414	345	15
..F..	650	-	260	325	390	638	112	414	345	15
..F..	1000	-	400	500	600	1277	239	729	516	35
..F..	1400	-	-	750	900	1700	239	729	516	35
..F..	1500	-	600	-	-	1703	239	729	516	35

THYRO-A 2A
H1(*), HRL1, HRLP1

Dual-phase power controller for three-phase loads implement with cost-saving three-phase circuit configuration

...H1 ...HRL1 ...HRLP1	Current (A)	Unit rating (kVA) 230 V	400 V	500 V	600 V	Power loss (W)	Dimensions (mm) W	H	D	Weight (kg) approx.
	16	-	11	14	-	60	90	131	127	1,4
	30	-	21	26	-	94	90	131	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	393	237	11
..F..	350	-	242	303	-	780	250	430	261	16,7
..F..	495	-	343	429	514	1190	194	380	345	22
..F..	650	-	450	563	675	1465	194	380	345	22
..F..	1000	-	693	866	1039	2785	417	685	516	54
..F..	1400	-	-	1299	1599	3300	417	685	516	54
..F..	1500	-	1039	-	-	3510	417	685	516	54

THYRO-A 3A
H1(*), HRL1, HRLP1

Three-phase power controller

...H1 ...HRL1 ...HRLP1	Current (A)	Unit rating (kVA) 230 V	400 V	500 V	600 V	Power loss (W)	Dimensions (mm) W	H	D	Weight (kg) approx.
	16	-	11	14	-	90	135	132	127	2,1
	30	-	21	26	-	141	135	132	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
..F..	495	-	343	429	514	1860	276	407	345	30
..F..	650	-	450	563	675	2265	276	407	345	30
..F..	1000	-	693	866	1039	4310	583	685	516	74
..F..	1400	-	-	1299	1559	5000	583	685	516	74
..F..	1500	-	1039	-	-	5325	583	685	516	74

(*) ...H1 types available up to 350 A

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