

THYRO-A

DIGITAL THYRISTOR SCR POWER CONTROLLERS

8 TO 1500 AMPS



With highly flexible interfacing for the load and power supply side, Thyro-A® modules precisely and reliably control power in an expanded range of applications.

PRODUCT HIGHLIGHTS

- Wear-free operations and precise, reliable performance
- DIN rail mounting (up to 60 A; for 1- and 2-phase devices)
- Integrated protection against contact
- Rated voltages up to 600 V; currents up to 1500 A
- 1-, 2- and 3-phase versions (2-phase version for 3-phase load without deploying the neutral conductor)
- Integrated semiconductor fuses
- LED status and level indication
- USB interface

TYPICAL APPLICATIONS

- Automotive (paint drying equipment)
- Chemical (pipe trace heaters, pre-heating equipment)
- 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)

SPECIFICATIONS

Thyro-A Series		
Operating Modes		
TAKT (full wave switch)	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	
VT	Combination of operating modes VAR and TAKT (on request)	
Thyro-A		
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, VT	
2A...	2-phase version for 3-phase load in cost saving 3-phase circuit; operating mode: TAKT	
3A...	3-phase version, for 3-phase load; operating modes: TAKT operating modes: TAKT, VAR, VT	
Rated Voltage ...H 3		
...230...	230 V -57% +10%	
...400...	400 V -57% +10%	
...500...	500 V -57% +10%	
Rated Voltage ...H RL3 und H RLP 3		
...230...	230 V -15% +10%	230 V -57% combined with 24 V input
...400...	400 V -15% +10%	400 V -57% combined with 24 V input
...500...	500 V -15% +10%	500 V -57% combined with 24 V input
...600...	600 V -15% +10%	600 V -57% combined with 24 V input
Network Frequency	For all types from 47 to 63 Hz	
Rated Current		
...-xxx...	8A, 16, 30, 45, 60, 100, 130, 170, 280, 350, 495, 650, 1000, 1400, 1500 A	
Load Types		
Types	Ohmic loads employed at R_{warm}/R_{cold} ratio 6:1	
	Limitation of on 3 x I_{nom}	
	Transformer loads	
Network 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 3	Set point inputs	2 set point inputs, secured (SE LV, PE LV) from the mains
		Input of analog set point, 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 to 24 V) digital set point is provided by the process computer or bus system
	Control types V_{eff} / V_{eff}^2	

SPECIFICATIONS (CONTINUED)

Power Supply Side

- Power supply voltage range of up to $0.43 \times U_{nom}$ › Frequency 47 to 63 Hz
- Internal network load optimization in TAKT and QTM operating modes
- Optional external network load optimization with Thyro-Power Manager

Certificates

- Quality standard in accordance with ISO 9001
- Canadian National Standard C22.2 No. 14
- Approval in accordance with UL 508
- CE conformity
- S.C.C.R. according to UL 508 A (100 kA short-circuit test), accredited 8 to 350 A
- RoHS conformity 5/6

Thyro-A Series	
...H RL3 (additional to ...H 3 features)	
Control types	$V_{eff} / V_{eff}^2 / I_{eff} / I_{eff}^2$
Load monitoring	Via an adjustable response threshold
Limitations	Current limitation $I_{eff} / \hat{I}$ VAR 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 V / 0(4)-20 mA, max. compliance voltage 10 V Can also be used as adjustment aid
External supply	24 V DC/AC, connected upon demand
Load types	Ohmic load employed at R_{warm}/R_{cold} ratio of up to 6 (only deployed for H RL3 and H RLP3) Limitation to $\hat{I} = 3 \times I_{nom}$ (for H RL3 and H RLP3 in VAR)
Operational display	Via LEDs and relay output (exchanger, indications adjustable)
...H RLP3 (additional to ...H RL3 features)	
Control types	$V_{eff} / V_{eff}^2 / I_{eff} / I_{eff}^2 / P$
System Interface	
Optional bus module for PROFIBUS® DPV1, Modbus® RTU, DeviceNet™, CANopen®, PROFINET®, Modbus® TCP, Ethernet/IP®	
Thyro-Tool PC software via USB interface	
Type Key Example	
Type Key	Thyro-A 2A 400-280 HF RLP3
Explanation	Thyro-A Digital power controller
	2A Thyro-A as 2-phase version, suitable for 3-phase load in cost-saving 3-phase circuit
	400 400 V rated voltage
	-280 280 rated A current
	H Semiconductor fuse
	F Forced ventilation
	R Failure Indicator relay
	L Load monitoring, including analog output
	P Performance control
	3 Additional Thyro-A identification



Thyro-A 1A H 3/H RL3/H RLP 3 single-phase power controller												
...H 3	...H RL3	...H RLP 3	Current (A)	Unit Rating (kVA)				Power Loss (W)	Dimensions (mm)			Approx. Weight (kg)
				230 V	400 V	500 V	600 V		W	H	D	
			8	3.2	3.2	4	-	9	45	136	129	0.7
			16	3.7	6.4	8	-	30	45	136	129	0.7
			30	6.9	12	15	-	47	45	136	129	0.7
			45	10	18	22.5	-	52	52	203	184	1.7
			60	14	24	30	-	80	52	203	184	1.7
			100	23	40	50	-	105	75	203	193	1.9
			130	30	52	65	-	150	125	320	241	4
			170	39	68	85	-	210	125	320	241	4
...F...	...F...	...F...	280	64	112	140	-	330	125	370	241	5
...F...	...F...	...F...	350	80	140	175	-	390	125	400	261	8.4
...F...	...F...	...F...	495	-	198	247	297	603	112	414	345	15
...F...	...F...	...F...	650	-	260	325	390	726	112	414	345	15
...F...	...F...	...F...	1000	-	400	500	600	1396	239	729	516	35
...F...	...F...	...F...	1400	-	-	700	840	1815	239	729	516	35
...F...	...F...	...F...	1500	-	600	-	-	1855	239	729	516	35



Thyro-A 2A H 3/H RL3/H RLP 3 dual-phase power controller for three phase loads with three -phase circuit											
...H 3	...H RL3	...H RLP 3	Current (A)	Unit Rating (kVA)			Power Loss (W)	Dimensions (mm)			Approx. Weight (kg)
				400 V	500 V	600 V		W	H	D	
			8	6	7	-	18	89	136	129	1.4
			16	11	14	-	60	89	136	129	1.4
			30	21	26	-	94	89	136	129	1.4
			45	31	39	-	96	104	203	184	3.4
			60	42	52	-	160	104	203	184	3.4
			100	69	87	-	210	150	203	193	3.8
			130	90	112	-	300	250	320	241	8
			170	118	147	-	420	250	320	241	8
...F...	...F...	...F...	280	194	242	-	660	250	393	241	11
...F...	...F...	...F...	350	242	303	-	780	250	430	261	16.7
...F...	...F...	...F...	495	343	429	514	1206	194	380	345	22
...F...	...F...	...F...	650	450	563	675	1453	194	380	345	22
...F...	...F...	...F...	1000	693	866	1039	2811	417	685	516	54
...F...	...F...	...F...	1400	-	1212	1454	3451	417	685	516	54
...F...	...F...	...F...	1500	1039	-	-	3531	417	685	516	54



Thyro-A 3A H 3/H RL3/H RLP 3 three -phase power controller											
...H 3	...H RL3	...H RLP 3	Current (A)	Unit Rating (kVA)			Power Loss (W)	Dimensions (mm)			Approx. Weight (kg)
				400 V	500 V	600 V		W	H	D	
			8	6	7	-	27	135	135	129	2.1
			16	11	14	-	90	135	136	129	2.1
			30	21	26	-	141	135	136	129	2.1
			45	31	39	-	144	156	203	184	5.1
			60	42	52	-	240	156	203	184	5.1
			100	69	87	-	315	225	203	193	5.7
			130	90	112	-	450	375	320	241	12
			170	118	147	-	630	375	320	241	12
...F...	...F...	...F...	280	194	242	-	990	375	393	241	15
...F...	...F...	...F...	350	242	303	-	1170	375	430	261	25.5
...F...	...F...	...F...	495	343	429	514	1822	276	380	345	30
...F...	...F...	...F...	650	450	563	675	2192	276	380	345	30
...F...	...F...	...F...	1000	693	866	1039	4127	583	685	516	74
...F...	...F...	...F...	1400	-	1212	1454	5086	583	685	516	74
...F...	...F...	...F...	1500	1039	-	-	5206	583	685	516	74

ORDERING INFORMATION

For ordering information, please contact your local Advanced Energy sales representative.



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ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

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With deep applications know-how and responsive service and support across the globe, AE builds collaborative partnerships to meet rapid technological developments, propel growth for its customers and power the future of technology.

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<u>2000002965</u>	<u>2000002887</u>	<u>2000002886</u>	<u>2000002729</u>	<u>2000002771</u>	<u>2000003096</u>	<u>2000002985</u>	<u>2000002908</u>
<u>2000003089</u>	<u>2000002953</u>	<u>2000003055</u>	<u>2000003094</u>	<u>2000002808</u>	<u>2000002770</u>	<u>2000003071</u>	<u>2000002909</u>
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