

The digital, communication-enabled Thyro-S<sup>®</sup> thyristor switch provides a comprehensive set of advanced functions to suit the exacting requirements of a wide variety of applications and process technologies.

## APPLICATIONS

- Automotive (e.g. paint drying equipment)
- Chemical (pipe trace heaters, pre-heating equipment)
- Furnace construction (industrial, diffusion, drying)
- Glass processing (drying coatings)
- Machine building (extruders, plastic presses)
- Packaging (shrink tunnels)
- Printing machines (IR drying)

# RELIABLE, FAST, ECONOMIC, AND COMMUNICATION-ENABLED

The high-effiency, connection-ready Thyro-S<sup>®</sup> thyristor switch delivers accurate, reliable, switch-free performance.

It can be connected to bus systems, used as a standalone unit, or used in combination with all established two-point process controllers, PLCs, or computer systems.

With simple mounting, minimal space requirements, quick commissioning, and safe operation, Thyro-S thyristor switches are easily integrated into a wide range of applications.

### **KEY FEATURES**

- > For ohmic or transformer loads
- > Current, voltage, or power switching
- > 230, 400, or 500 V
- > 16 to 280 A
- Integrated semiconductor fuse
- > Secure isolation between control and power sections
- Three-phase design by connecting two Thyro-S units
- > DIN rail mounting for 16 A, 30 A, 45 A, 60 A

#### ADVANCED COMMUNICATION AND CONTROL

- Standard system interfaces for connection to an optional bus module:
  - EtherNet/IP\*
  - CANopen<sup>®</sup>
  - DeviceNet<sup>™</sup>
  - Modbus RTU<sup>®</sup>
  - Modbus TCP<sup>®</sup>
  - PROFIBUS® DPV1
  - PROFINET<sup>®</sup>
- LED status messages
- > 1:1 operating mode, as well as 1:2, 1:3, 1:5 for commissioning
- > 24 V (> 3 V) or standard system interface logic signal control

## CERTIFICATION AND COMPLIANCE

- > UL 508A (100 kVA SCCR)
- > CE
- > ISO 9001 quality standards

## ADDITIONAL FEATURES FOR H RL1 MODEL

- > 24 VAC/VDC external electronic power supply
- > Load monitoring
- > Alarm relay



(A)     230 V     400 V     500 V     (W)     W     H     D     (kg)       16     3.7     6.4     8     30     45     121     127     0.7       30     6.9     12     15     477     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     370     237     5       30 V -57% +10%     H1 types     112     140     330     125     370     237     5       30 V -57% +10%     H2 types > 99 V using an external 24 V electronic power supply     00 V -57% + 10%     H1 types <t< th=""><th rowspan="2">Туре</th><th rowspan="2">Current (A)</th><th colspan="3">Unit Rating (kW)</th><th>Power Loss</th><th colspan="3">Dimensions (mm)</th><th>Weight</th></t<>	Туре	Current (A)	Unit Rating (kW)			Power Loss	Dimensions (mm)			Weight	
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   190   19     130   30   52   65   150   125   320   237   40     170   39   68   85   210   125   320   237   40     280   64   112   140   330   125   370   237   55     30 V -57% + 10%   H L I types > 9 V using an external 24 V electronic power supply   237   40     30 V -57% + 10%   H R L I types > 17 V using an external 24 V electronic power supply   100   111   111     00 V -57% + 10%   H R L I types > 17 V using an external 24 V electronic power supply   100   111   111     00 V -57% + 10%   H R L I types > 17 V using an external 24 V electronic power supply   111   111   <			230 V	400 V	500 V	(W)	w	н	D	(kg)	
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   190   1.9     130   30   52   65   150   125   320   237   4     170   39   68   85   210   125   320   237   4     170   39   68   85   210   125   370   237   5     CATED VOLTAGE     30 V -57% + 10%   H 1 types   112   140   330   125   370   237   5     30 V -57% + 10%   H RL1 types > 99 V using an external 24 V electronic power supply   5		16	3.7	6.4	8	30	45	121	127	0.7	
60   14   24   30   80   52   190   182   1.7     100   23   40   50   105   75   190   190   190   1.9     130   30   52   65   150   125   320   237   4     170   39   68   85   210   125   320   237   4     280   64   112   140   330   125   370   237   5     CATED VOLTAGE     30 V -57% + 10%   H 1 types   112   140   330   125   370   237   5     SO V -57% + 10%   H RL1 types > 99 V using an external 24 V electronic power supply     00 V -57% + 10%   H RL1 types > 172 V using an external 24 V electronic power supply   V		30	6.9	12	15	47	45	121	127	0.7	
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     7   280   64   112   140   330   125   370   237   5     CATED VOLTAGE     30 V -57% + 10%   H RL1 types > 9 V using an external 24 V electronic power supply     00 V -57% + 10%   H RL1 types > 9 V using an external 24 V electronic power supply   V   V     00 V -57% + 10%   H RL1 types > 172 V using an external 24 V electronic power supply   V   V     00 V -57% + 10%   H RL1 types > 172 V using an external 24 V electronic power supply   V   V     00 V -57% + 10%   H RL1 types > 172 V using an external 24 V electronic power supply   V   V     00 V -57% + 10%   H RL1 types > 15 V using an external 24 V electronic power supply   V   V     00 V -57% + 10%   H RL1 types > 15 V using an external 24 V electronic power supply   V   V     PREATION   All types		45	10	18	22.5	48	52	190	182	1.7	
130   30   52   65   150   125   320   237   4     170   39   68   85   210   125   320   237   4     280   64   112   140   330   125   370   237   5     CATED VOLTAGE     SO V -57% + 10%   H 1 types   H RL1 types > 9 V using an external 24 V electronic power supply   5     OV -57% + 10%   H RL1 types > 172 V using an external 24 V electronic power supply     OV -57% + 10%     H RL1 types > 172 V using an external 24 V electronic power supply     OV -57% + 10%     H RL1 types > 172 V using an external 24 V electronic power supply     OV -57% + 10%     OV -57% + 10%     H RL1 types > 172 V using an external 24 V electronic power supply     OV -57% + 10%     OV -57% + 10%     OV -15% + 10%     OV -15% + 10%     OV -15% + 10%     OV -15% + 10%     OV -57% + 10%     OV -15% + 10%		60	14	24	30	80	52	190	182	1.7	
170   39   68   85   210   125   320   237   4     280   64   112   140   330   125   370   237   5     CATED VOLTAGE     30 V -57% + 10%   H 1 types   H RL1 types > 9 V using an external 24 V electronic power supply   V		100	23	40	50	105	75	190	190	1.9	
P   280   64   112   140   330   125   370   237   5     ATED VOLTAGE     30 V -57% + 10%   H 1 types   H 1 types > 9 V using an external 24 V electronic power supply   V -15% + 10%   H RL1 types > 9 V using an external 24 V electronic power supply   V -15% + 10%   H 1 types   V -15% + 10%   H 1 types   V -15% + 10%   H RL1 types > 12 V using an external 24 V electronic power supply   V -15% + 10%   H RL1 types > 12 V using an external 24 V electronic power supply   V -15% + 10%   H 1 types   V -15% + 10%   H 1 types > 15 V using an external 24 V electronic power supply   V -15% + 10%   H RL1 types > 15 V using an external 24 V electronic power supply   V -15% + 10%   V -15% + 10% <t< td=""><td></td><td>130</td><td>30</td><td>52</td><td>65</td><td>150</td><td>125</td><td>320</td><td>237</td><td>4</td></t<>		130	30	52	65	150	125	320	237	4	
ATED VOLTAGE     30 V -57% + 10%   H 1 types     30 V -15% + 10%   H RL1 types > 99 V using an external 24 V electronic power supply     00 V -57% + 10%   H 1 types     00 V -15% + 10%   H RL1 types > 172 V using an external 24 V electronic power supply     00 V -57% + 10%   H RL1 types > 172 V using an external 24 V electronic power supply     00 V -57% + 10%   H 1 types     00 V -15% + 10%   H RL1 types > 215 V using an external 24 V electronic power supply     00 V -15% + 10%   H RL1 types > 215 V using an external 24 V electronic power supply     00 V -15% + 10%   H RL1 types > 215 V using an external 24 V electronic power supply     01 V -15% + 10%   H RL1 types > 215 V using an external 24 V electronic power supply     02 V -15% + 10%   H RL1 types > 215 V using an external 24 V electronic power supply     03 V -15% + 10%   H RL1 types > 215 V using an external 24 V electronic power supply     04 V -15% + 10%   H RL1 types from 47 to 63 Hz		170	39	68	85	210	125	320	237	4	
30 V -57% + 10%   H 1 types     30 V -15% + 10%   H RL1 types > 99 V using an external 24 V electronic power supply     00 V -57% + 10%   H 1 types     00 V -15% + 10%   H RL1 types > 172 V using an external 24 V electronic power supply     00 V -57% + 10%   H RL1 types > 172 V using an external 24 V electronic power supply     00 V -57% + 10%   H RL1 types > 172 V using an external 24 V electronic power supply     00 V -57% + 10%   H RL1 types > 215 V using an external 24 V electronic power supply <b>DPERATING SPECIFICATIONS</b> All types from 47 to 63 Hz	F	280	64	112	140	330	125	370	237	5	
00 V -57% + 10% H 1 types   00 V -15% + 10% H RL1 types > 172 V using an external 24 V electronic power supply   00 V -57% + 10% H 1 types   00 V -57% + 10% H 1 types   00 V -15% + 10% H RL1 types > 215 V using an external 24 V electronic power supply   00 V -15% + 10% H RL1 types > 215 V using an external 24 V electronic power supply   00 V -15% + 10% H RL1 types > 215 V using an external 24 V electronic power supply	230 V -57%	+ 10%									
00 V -15% + 10% H RL1 types > 172 V using an external 24 V electronic power supply   00 V -57% + 10% H 1 types   00 V -15% + 10% H RL1 types > 215 V using an external 24 V electronic power supply   DPERATING SPECIFICATIONS											
00 V -57% + 10% H 1 types   00 V -15% + 10% H RL1 types > 215 V using an external 24 V electronic power supply   DPERATING SPECIFICATIONS											
00 V -15% + 10%   H RL1 types > 215 V using an external 24 V electronic power supply     DPERATING SPECIFICATIONS     All types from 47 to 63 Hz											
OPERATING SPECIFICATIONS All types from 47 to 63 Hz											
All types from 47 to 63 Hz				RL1 types > 2	215 V using ar	n external 24 V electronic po	ower supply				
letwork Frequency	OPERAT	ING SPECIFIC									
Max. frequency change 5% per half-wave	Network Frequency										
			M	Max. frequency change 5% per half-wave							

	Max. frequency change 5% per half-wave						
Load Types	Ohmic loads and transformer loads						
Relay Output	1 changeover contact						
Operating Modes <sup>1</sup>							
1:1	All full-waves (default setting) <sup>2</sup>						
1:2	Every 2nd full wave cycle <sup>2</sup>						
1:3	Every 3rd full wave cycle <sup>2</sup>						
1:5	Every 5th full wave cycle <sup>2</sup>						
Digital Set Point Inputs							
Set Point 1	Logical input DC 0 24 V $R_i > 3.3 k\Omega$ ON > 3 V						
Set Point 2	System interface, connection to controlling automation system via optional bus module is possible						
System Interface							
Connections	Optional bus module for Profibus* DPV1, Modbus* RTU, DeviceNetTM, CANopen*, Profinet*, Modbus* TCP, Ethernet/IP*						
	PC software Thyro-Tool Family via PC adapter						
Environmental Specifications							
	35°C external fan cooling (F-type, with integrated fan)						
	45°C passive convection cooling						
Ambient temperature	Operation at higher temperature is possible with reduced current limits:						
	Temperature range up to 55°C: rated current - 2%/°C						
	UL applications: max. 40°C						

<sup>1</sup> Load signal (for digital set point = ON)

<sup>2</sup> Without direct current ratio

Advanced Energy Industries, Inc 1625 Sharp Point Drive, Fort Collins, Colorado 80525, USA Phone +1.970.221.0108 > Fax +1.970.407.5296 > powercontroller@aei.com > advanced-energy.com

ENG-Thyro-S-250- 01 10.15

Specifications are subject to change without notice. © 2015 Advanced Energy Industries, Inc. All rights reserved. Advanced Energy\* and Thyro-S\* are U.S. trademarks of Advanced Energy Industries, Inc. CANopen\* is a trademark of CAN in Automation e.V. Modbus\* is a trademark of Schneider Electric U.S.A., Inc. Profibus\* and Profinet\* are trademarks of Profibus and Profinet International (PI). DeviceNet™ and EtherNet/IP\* are trademarks of ODVA, Inc.