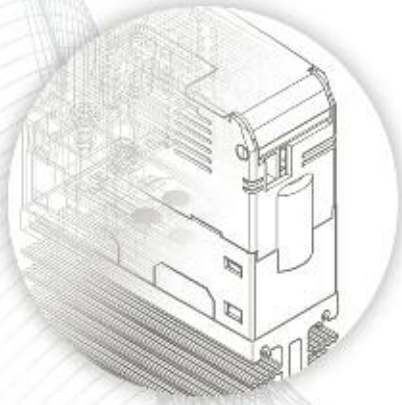
Field Products

Honeywell

Honeywell Thyristor 2012 Catalog

Why choose Honeywell?



We designed a superior product.

Our customers have problems to solve. Our mission is to help them solve those problems. We designed an innovative product that will help manufacturing companies be more competitive and efficient.

No compromise.

- Heatsink and thyristor junctions generously sized to guarantee a long life for the thyristor unit.
- Units working at low junction thyristor temperature with 20% margin on max temperature.
- Strong connection design between the block terminal and thyristor semiconductor connection allows for generous sizing.
- All the copper connections treated against oxidation.
- Rugged construction for electronic and plastic parts.
- Protection against over voltage.

Have a closer look.

Open a Honeywell thyristor unit and any of our competitors, you will discover the difference and see why we can offer a longer life warranty (see below tab).

Estimated Powercycles of AL wire bonded dies.

	dT	Tj max \°C 100°C	110°C	120°C	130°C	140°C
Tj start \°C	80°C	248.000				
	70°C	320.200	110.000			
	60°C	464.000	145.500	51.100		
	50°C	782.000	216.000	69.100	24.800	
	40°C	1.600.000	372.000	105.000	34.100	12.500
SSR	30°C	4.800.000	793.000	184.000	**52.500**	17.500
Single Cycle	20°C	**25.400.000**	2.400.000	400.000	94.000	27.500
			12.800.000	1.200.000	209.000	50.000
				6.700.000	645.000	112.000
					3.600.000	353.000
						2.000.000
		HONEYWELL	HONEYWELL			COMPETITORS

Honeywell predicted life working in Single Cycle.

Honeywell predicted life whith SSR Input and ZC Firing.

Predicted life of majority of competitors working at 130°C with SSR Input and ZC firing.

Save space = Save money

With a reduction of 50% space, it's easy to save hundreds off the cabinet price. The difference between conventional mounting and Honeywell thyristor is shown on page 30.

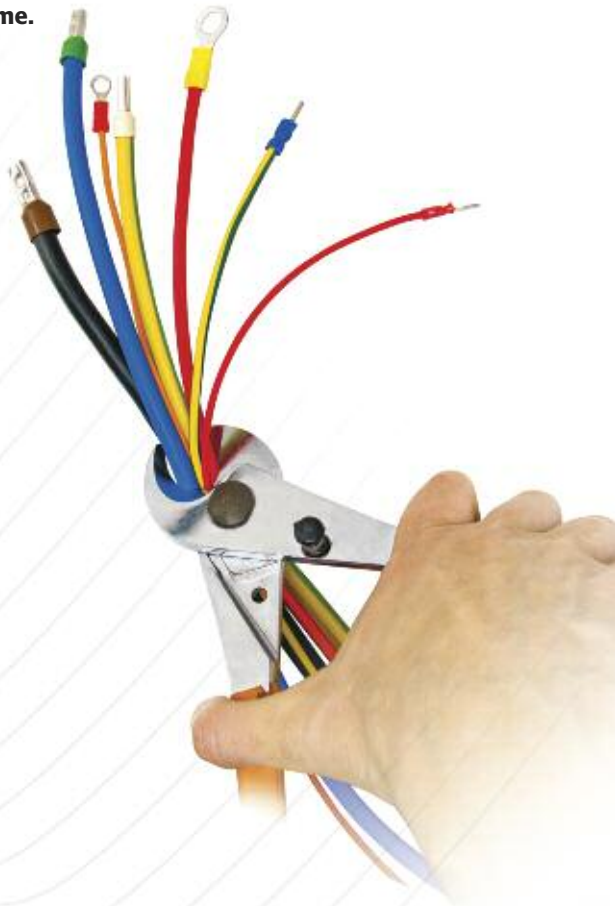
Left Side (Traditional)
Mounted on the baseplate are a Fuse & Fuseholder, 40A Solid State Relay and a Current Transformer.

Right Side (Innovative)
Mounted on the same baseplate are two THYRISTOR 40A units, each having the same components as the traditional unit.
This simple example demonstrates a 50% saving of panel space.

An innovative process solution that will dramatically save wiring & labour time.

The new THYRISTOR HS family can be put together with little technical knowledge.

- SSR Solid State Relay with Zero Crossing.
- SSR Solid State Relay + Fuse & Fuse Holder.
- SSR Solid State Relay + Fuse & Fuse Holder + Current Transformer.
- Different versions with or without heatsink.
- Single and three phase thyristor units.



The new THYRISTOR HM = THYRISTOR HS + Drive M
The addition of Drive T transforms a simple unit into a sophisticated unit capable of the following additional features.

- Universal inputs accepting all standard signals.
- Universal firing including Zero Crossing, Burst Firing Single Cycle, Delayed Triggering and Phase Angle.
- Universal Feed Back (Voltage, Current and Power).
- RS485 Communication.

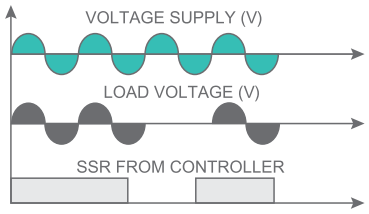
OPTIONS

- Heater Break Alarm for partial or total load failure.
- Thyristor short circuit failure.

Glossary

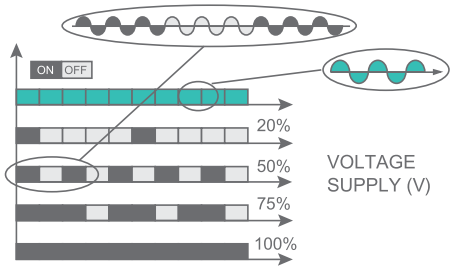
Zero Crossing ZC

ZC firing mode is used with the logic output from a temperature controller and so the thyristor operates like a contactor. The cycle time is performed by the temperature controller. Zero Crossing minimizes interferences as the thyristor unit switches ON-OFF at zero voltage.



Burst Firing BF

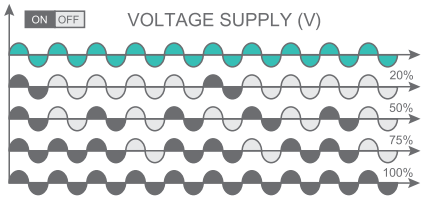
This firing is performed digitally within the thyristor unit at zero volts, producing no EMC interference. Analogue input is necessary for BF and the number of complete cycles must be specified for 50% power demand. This value can be between 1 and 255 complete cycles, determining the speed of firing. When 1 is specified, the firing mode becomes Single Cycle (SC).



Soft Start + Burst Firing now availabe as an option.

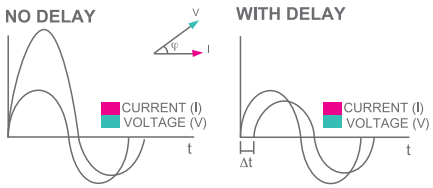
Single Cycle SC

SC is the fastest zero crossing switching method. At 50% input signal, one cycle is ON and one cycle is OFF. At 75%, 3 cycles are ON and one cycle is OFF. If power demand is 76% the unit performs the same as for 75% but every time the unit switches ON the microprocessor divides 76/75 and memorises the ratio. When the sum is one the unit delivers one cycle more to the load. With this firing it is necessary to have analogue input.



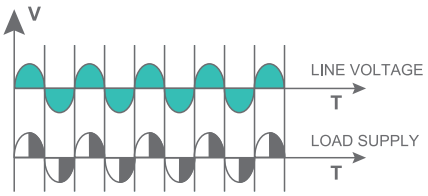
Delayed Triggering DT

Used to switch the primary coil of transformers when coupled with normal resistive loads (not cold resistance) on the secondary, DT prevents the inrush current when zero voltage (ON-OFF) is used to switch the primary. The thyristor unit switches OFF when the load voltage is negative and switches ON only when positive with a pre-set delay for the first half cycle.



Phase Angle PA

PA controls the power to the load by allowing the thyristor to conduct for part of the AC supply cycle only. The more power required, the more the conduction angle is advanced until virtually the whole cycle is conducting for 100% power. The load power can be adjusted from 0 to 100% as a function of the analogue input signal, normally determined by a temperature controller or potentiometer, PA is normally used with inductive loads.



Soft Start+Burst Firing S+BF

This is an additional feature to Burst Firing. Starting in Phase Angle mode, the unit ramps from zero to full voltage at a pre-set time, finishing at full conduction for the remainder of the ON period. Idealy used to switch small inductive loads, S+BF avoids current surge and minimizes electrical interference.

Feedback/Control Mode

Supply voltage fluctuations changes the power to the load. To overcome this effect the voltage supplied to the load is measured and compared with the power demand from the controller. The error signal is used to automatically hold the power at the value requested.

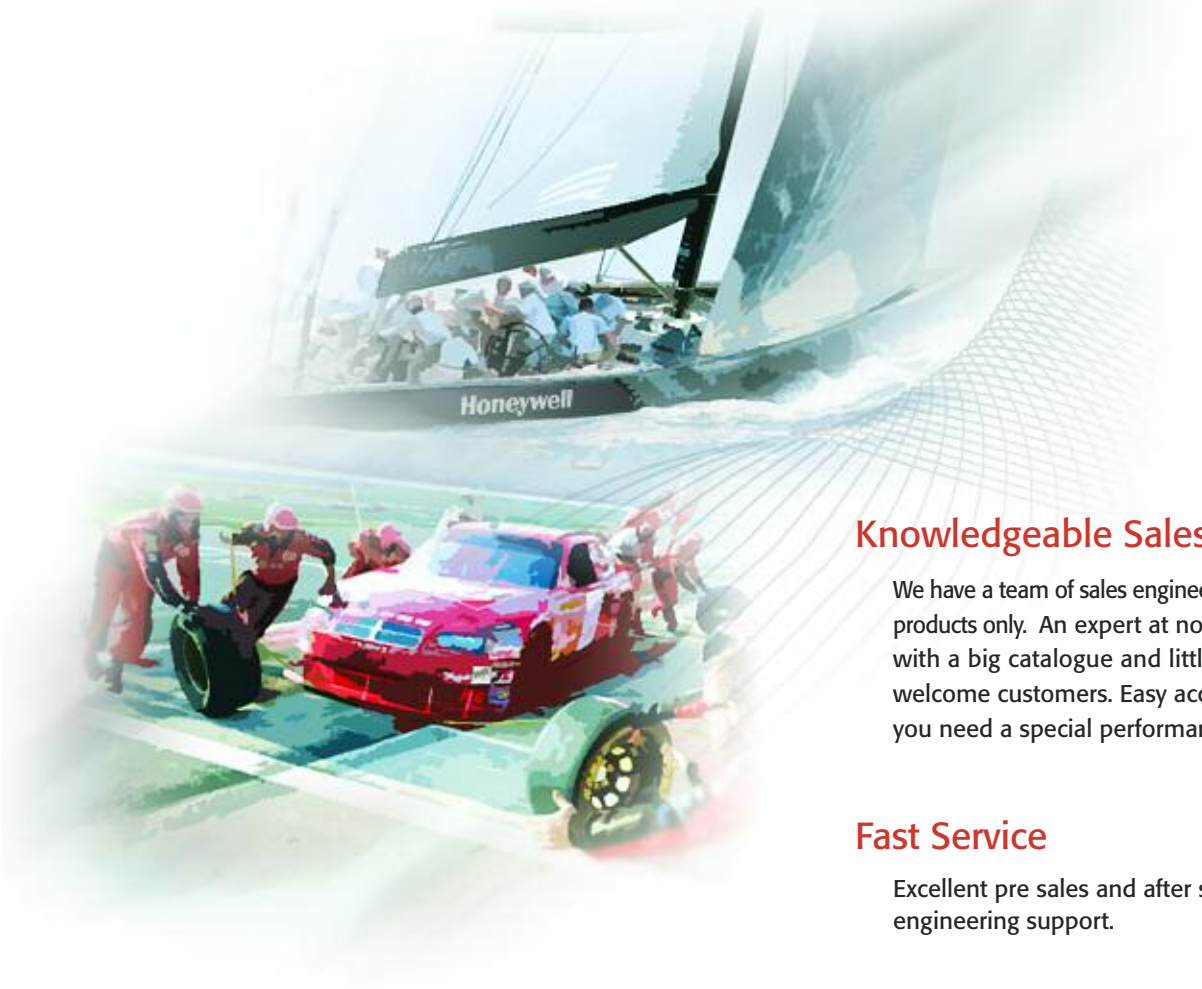
Three types of control more are available:

- Voltage Control Mode, where the input signal is proportional to the voltage output (voltage feedback).
- Current Control Mode, where the input signal is proportional to the current output (current feedback).
- Power Control Mode, where the input signal is proportional to the power output (power feedback).
- As an option it is possible to transfer control mode from voltage to power via a simple digital command.

What do you need?

They want a positive experience with our total solution, not just a cheap price.

Honeywell is confident of achieving this with…



Knowledgeable Sales Team

We have a team of sales engineers focused on core business products only. An expert at no cost, not an engineer with a big catalogue and little product knowledge, will welcome customers. Easy access to engineers when you need a special performance project.

Fast Service

Excellent pre sales and after sales service including engineering support.

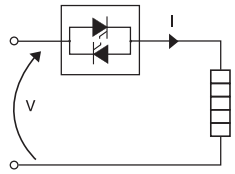
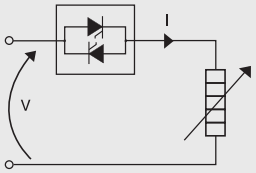
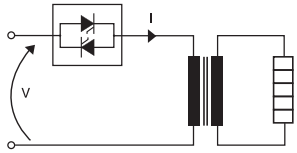
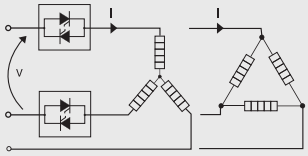
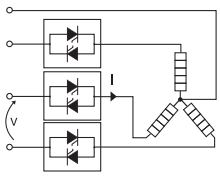
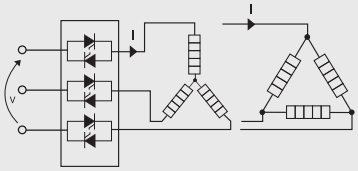
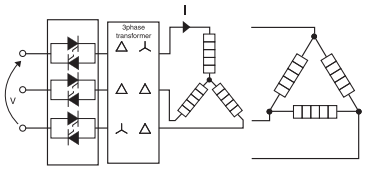
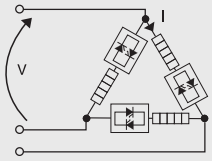
Easy to do Business With

Fast reaction to your enquiry, short lead times, timely production of order acknowledgement, invoices etc.

Catalogues and manuals of all our products plus configuration software, available free of charge from our web-site.

Our people are always welcoming to our customers.

APPLICATION GUIDE

APPLICATION GUIDE	LOAD TYPE	MODEL	CURRENT RANGE	N. OF UNITS	PHASE CONTROLLED
	Normal Resistance Infrared Medium and long waveform	THYRISTOR HS1-1PH	30-700A	1	1
	Quartz lamp infrared short waveform	THYRISTOR HM1-1PH	35-700A	1	1
		THYRISTOR HCL	35-700A	1	1
	Molibdenum, Tungstenum, Superkanthal, Platinum	THYRISTOR HCL	35-700A	1	1
	Silicon carbide elements	THYRISTOR HM1-1PH	35-700A	1	1
		THYRISTOR HCL	35-700A	1	1
	Transformers coupled with normal resistance	THYRISTOR HM1-1PH	35-700A	1	1
	Transformers coupled with cold resistances (kanthal super)	THYRISTOR HCL	35-700A	1	1
	Normal Resistance	THYRISTOR HS2-2PH	30-700A	1	2
		THYRISTOR HM2-2PH	30-700A	1	2
	Normal Resistance	THYRISTOR HS3-3PH	30-500A	1	3
		THYRISTOR HM3-3PH	30-500A	1	3
	Silicon carbide elements	THYRISTOR HE3-3PH THYRISTOR T3-3PH	35-500A 35-2700A	1	3
		THYRISTOR HM3-3PH	30-500A	1	3
	Molibdenum, Tungstenum Super Kantal Platinum, Quartz lamp infrared short waveform	THYRISTOR HE3-3PH	35-500A	1	3
		THYRISTOR T3-3PH	35-2700A	1	3
	Three phase transformer	THYRISTOR HE3-3PH	35-500A	1	3
		THYRISTOR HM3- 3PH	35-2700A	1	3
	Three phase normal load resistance with open delta connection	THYRISTOR HS3-3PH	30-500A	1	3
		THYRISTOR HM3-3PH	30-500A	1	3
	Cold resistance	THYRISTOR HCL	30-700A	3	3
		THYRISTOR HE	35-500A	1	3

SUGGESTED FIRING MODE FOR YOUR APPLICATIONS					OTHER FEATURES				SIZING		NOTE
ZC	SC	BF	BF Basic	S+BF	DT	PA	CL	Control	V	I	
■			■						V	$\frac{P}{V}$	For general resistance applications with low variations in temperature and age. For low inertia loads use Single Cycle (SC) or Phase Angle (PA).
	■	■				■		V^2			
						■	■	VxI			
						■	■	I	V	$\frac{P}{V}$	These resistances change with temperature but have low variations with age. Starting current withcold elements can be 16 times nominal current (superkanthal). Infrared lamp short waveform can reach 8 time nominal current.
		■						V to VxI	V	$\frac{P}{V}$	These resistances change value with temperature and age. The value at the end of element life can be 4 times the initial value. Constant power regulation is necessary with V to VxI Transfer.
						■					
					■			VxI	V	$\frac{P}{Vcoø}$	Transformers and inductors have inrush current on start up. Phase Angle plus Soft Start and current limit are required. To switch the transformer ON-OFF, use DT firing that will automatically switch ON-OFF when current value is at zero.
						■	■	I	V	$\frac{P}{Vcoø}$	Use Phase Angle + Current Limit.
■			■						V	$\frac{P}{1,73V}$	THYRISTOR HM2-2PH is suitable to control resistive loads with delta or star connection without neutral.
		■						V^2	V	$\frac{P}{1,73V}$	
■			■						$\frac{V}{1.73}$	$\frac{P}{1.73V}$	Three phase load with star plus neutral connection must be controlled on the three phases.
		■						V^2			
						■		V to VxI	V	$\frac{P}{1.73V}$	On three phase silicon carbide elements VxI feedback is suggested to have a constant power control. This is necessary to compensate resistance change with temperature and age. Resistance value at the end of element life is 4 times the original value. With THYRISTOR HM use BF firing and Power Limit.
		■									
						■	■	I			These resistances change with temperature but have low variations with age. Start up current with cold elements can be many times the nominal current value. In this case it is necessary to use Phase Angle + Current Limit.
						■	■	I			
						■	■	V	V	$\frac{P}{1.73Vcoø}$	Three phase THYRISOR T and THYRISTOR HE are specially designed to drive three phase transformers coupled on secondary with normal or special resistive loads.
						■	■	V			
■			■						V	$\frac{P}{3V}$	Open delta can be driven by three phase unit or three one phase unit.
		■						VxI			
						■	■	I	V	$\frac{P}{3V}$	

CONTROL MODE: V = Voltage feedback V^2 = Square Voltage feedback VxI = Power feedback I = Current feedback

		THYRISTOR	THYRISTOR	THYRISTOR	THYRISTOR	THYRISTOR
	CODE	HCL	HS1	HS2	HS3	HM1
VOLT.	MAX VOLTAGE 480V	■	■	■	■	■
	MAX VOLTAGE 600V	■	■	■	■	■
	MAX VOLTAGE 690V	■ > 280A	■ > 280A	■ > 280A	■ >= 225A	■ >= 400A
LOAD TYPE	SINGLE PHASE	■	■			■
	3 PHASE LOAD STAR OR DELTA			■	■	
	3 PHASE LOAD STAR WITH NEUTRAL				■	
	3 PHASE LOAD OPEN DELTA	■			■	
INPUT TYPE	SSR 4:30VDC	■	■	■	■	■
	4:20 mA	■	O	O	O	■
	0:10 Vdc	■	O	O	O	■
	10K Potentiometer	■				■
	COMMUNICATION COMMAND	■				■
FIRING	ZERO CROSSING		■	■	■	
	SINGLE CYCLE					■
	BURST FIRING		O (4)	O (4)	O (4)	■
	SOFT START + BURST FIRING					■
	PHASE ANGLE	■				■
	SOFT START + PHASE ANGLE	■				■
	DELAYED TRIGGERING + BURST	■				■
CONTROL MODE	VOLTAGE	■				■
	SQUARE VOLTAGE	■				■
	CURRENT	■				■
	VOLTAGE X CURRENT (POWER)	■				■
	VOLTAGE TO POWER TRANSFER	■				■
	EXTERNAL CONTROL MODE	■				■
	TEMPERATURE CONTROLLER					
OPTION	INTERNAL CURRENT LIMIT	■ (1)				
	HEATER BREAK+SCR SHORT CIRCUIT	O	O	O	O	O
	INTEGRATED FIXED FUSES	■ > 40A	■ > 40A	■ > 40A	■ > 40A	■ > 40A
	FUSE & FUSE HOLDER	=< 40A	=< 40A	=< 40A	=< 40A	=< 40A
	FLAT WIRING TERMINAL		O (2)	O (2)	O (2)	
COMM.	RS485 WITH MODBUS PROTOCOL	■				■
	PROFIBUS DP; CAN OPEN+ETHERNET	O				O
	FRONTAL KEY PAD	■				■
	PC PROGRAMMABLE+USB\TTL Conv.	■				■
	REVO EASY					
I/O	ANALOGUE INPUT/OUTPUT (5)	1/1				Ø/1
	DIGITAL INPUT/OUTPUT	2/1				2/1
CURRENT	CURRENT	SIZE	SIZE	SIZE	SIZE	SIZE
	30		SR3.SR6	SR4.SR7	SR5.SR8	
	35	SR9	SR3.SR6	SR4.SR7	SR5.SR8	SR9
	40	SR9	SR3.SR6	SR4.SR7	SR5.SR8	SR9
	45					
	60	SR15	SR12	SR12	SR13	SR15
	75					
	90	SR15	SR12	SR12	SR13	SR15
	100					
	120	SR15	SR12	SR13	SR14	SR15
	125					
	150	SR15	SR12	SR13	SR14	SR15
	180	SR15	SR12	SR13	SR14	SR15
	200					
	210	SR15	SR12	SR13	SR14	SR15
	225				S13	
	280	S9	S9	S10		S9
	300				S14	
	350				S14	
	400	S12	S12	S14	S14	S12
	450			S14	S14	
	500	S12	S12	S14	S14	S12
	550					
	600	S12	S12	S14		S12
	700	S12	S12	S14		S12
	800					
	850					
	1000					
	1400					
	1500					
	1850					
	2000					
	2400					
	2700					

THYRISTOR	THYRISTOR	THYRISTOR	THYRISTOR	THYRISTOR	THYRISTOR	THYRISTOR
HM2	HM3	HE2	HE3	T1	T2	T3
■	■	■	■	■	■	■
■	■	■	■	■	■	■
■ >= 400A	■ >= 250A			■	■	■
				■		
■	■	■	■		■	■
	■		■			■
	■		■			■
■	■	■	■	■	■	■
■	■	■	■	■	■	■
■	■	■	■	■	■	■
■	■	■	■	■	■	■
■	■	■	■	■	■	■
				■		
■	■	■	■	■	■	■
			■	■		■
			■	■		■
			■	■		■
		■	■	■	■	■
■	■	■	■	■	■	■
■	■					
■	■	■	■	■	■	■
■	■	■	■	■	■	■
■	■	■	■	■	■	■
				■	■	■
			■ (1)	■ (1)		■ (1)
O	O	■	■	■	■	■
■ > 40A	■ > 40A	■	■	■	■	■
=< 40A	=< 40A					
■	■	■	■	■	■	■
O	O	O	O	O	O	O
■	■	■	■	■	■	■
■	■	■	■	■	■	■
		■	■	■	■	■
Ø/1	Ø/1	Ø/1	1/1	2/4	2/4	2/4
2/1	2/1	4/3	4/3	6/4	6/4	6/4
SIZE	SIZE	SIZE	SIZE	SIZE	SIZE	SIZE
SR10	SR11					
SR10	SR11	S9	S9		S13	S13
SR10	SR11					
		S9	S9		S13	S13
SR16	SR16					
		S9	S9		S13	S13
SR16	SR16					
		S9	S11		S13	S13
SR16	SR17					
		S9	S11		S13	S13
SR16	SR17	S9	S11		S13	S13
SR16	SR17					
		S9				
SR16	SR17					
	S13		S13		S13	S13
S10		S14			S14	
	S14		S14			S14
	S14		S14			S14
S14	S14	S14	S14		S14	S14
S14	S14	S14	S14		S14	S14
S14	S14	S14	S14		S14	S14
S14		S14			S14	S14
S14		S14			S14	
				S14	S14	S15
				S18	S16	S22
				S19	S17	S25
				S19	S17	S25
				S20	S23	S26
				S20	S23	S26
				S21	S24	S27
				S21	S24	S27

■ Standard ○ Option (1) Phase Angle only (2) Flat wiring available as option ≤ 40A (3) Random Firing at 690V (4) 4-8-16 Cycles Simplified Burst Firing available with Analog Input only (5) Main Analog Input not Included

SIZE AND DIMENSIONS

SR3 H 121 x W 36 x D 125 - 0,44kg

SR4 H 121 x W 72 x D 125 - 0,88kg

SR5 H 121 x W 108 x D 125 - 1,32kg

SR6 H 121 x W 36 x D 185 - 0,61kg

SR7 H 121 x W 72 x D 185 - 1,22kg

SR8 H 121 x W 108 x D 185 - 1,83kg

SR9 H 121 x W 72 x D 185 - 1,15kg

SR10 H 121 x W 108 x D 185 - 1,76kg

SR11 H 121 x W 144 x D 185 - 2,4kg

SR12 H 269 x W 93 x D 170 - 3,4kg

SR13 H 269 x W 186 x D 170 - 6,8kg

SR14 H 269 x W 279 x D 170 - 10,2kg

SR15 H 273 x W 93 x D 170 - 3,6kg

SR16 H 273 x W 186 x D 170 - 7kg

SR17 H 273 x W 279 x D 170 - 10,6kg

Note: H=Height W= Width D= Dept

SIZE AND DIMENSIONS

S9 H 350 **x** W 116 **x** D 220 - 5,5kg

S10 H 350 **x** W 240 **x** D 230 - 11kg

S11 H 440 **x** W 137**x** D 270 - 10,5kg.

S12 H 520 **x** W 137 **x** D 270 - 15kg

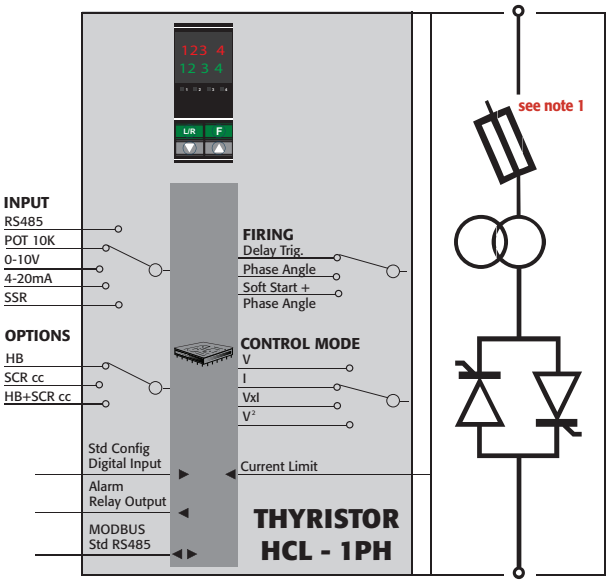
S13 H 440 **x** W 262 **x** D 270 - 18kg

S14 H 520 **x** W 262 **x** D 270 - 22,5kg

S15 3PH H 520 **x** W 400 **x** D 270 - 43kg (700-850A)

S16 2PH H 580 **x** W 400 **x** D 435 54kg (1000A)	**S18** 1PH H 580 **x** W 263 **x** D 435 28kg (1000A)	**S22** 3PH H 580 **x** W 525 **x** D 435 56kg (1000A)	**S26** 3PH H 790 **x** W 780 **x** D 533 44kg (1850A-2000A)
S17 2PH H 780 **x** W 400 **x** D 435 65kg (1400A-1500A)	**S19** 1PH H 780 **x** W 263 **x** D 435 39kg (1400A-1500A)	**S23** 2PH H 780 **x** W 525 **x** D 533 96kg (1850A-2000A)	**S27** 3PH H 790 **x** W 890 **x** D 518 174kg (2400A-2700A)
	S20 1PH H 780 **x** W 263 **x** D 533 48kg (1850-2000A)	**S24** 2PH H 890 **x** W 525 **x** D 518 116kg (2400A-2700A)	
	S21 1PH H 890 **x** W 263 **x** D 518 58kg (2400-2700A)	**S25** 3PH H 780 **x** W 525 **x** D 435 77 kg (1400-1500A)	

THYRISTOR HCL-1PH



Technical Specification

- **Dimensions:** See size and dimensions at page 10-11.
- **Load type:** Normal resistance, infrared long, short and medium waveform, Silicon Carbide, cold resistance coupled with transformer.
- **Inputs:** 0-10V dc, 4-20mA, 10kpot, SSR, RS485.
- **Firing mode:** Burst Firing, Single Cycle, Soft Start + Phase Angle, Delayed Triggering.
- **Operating temperature:** 0 to 40°C without derating.
- **Control mode:** V², V Voltage, VxI Power and current I.
- **RS485 port. RTU Modbus Protocol.**
- **Comply with EMC and cUL (Pending).**
- **Data sheet:** More details on "THYRISTOR HCL" bulletin.

Option

HEATER BREAK ALARM

Note 2

	1	2	3	4	5	6		7	8	9	10	11	12	13	14	15	16
THYRISTOR HCL-1PH	**H**	**C**	**L**	_	_	_	**-**	_	_	_	_	_	_	_	_	_	_

4, 5, 6 Current

Description code	Numeric code
35A	0 3 5
40A	0 4 0
60A	0 6 0
90A	0 9 0
120A	1 2 0
150A	1 5 0
180A	1 8 0
210A	2 1 0
280A	2 8 0
400A	4 0 0
500A	5 0 0
600A	6 0 0
700A	7 0 0

7 Max Voltage

Description code	Numeric code
480V	4
600V	6
690V Available on units > 280A	7

8 Aux. Voltage supply

Description code	Numeric code
90:130V	1 (3)
170:265V	2 (3)
230:345V	3 (3)
300:530V	5 (3)
510:690V	6 (3)
600:760V	7 (3)

9 Input

Description code	Numeric code
0:10V dc	V
4:20 mA	A
10 K Pot.	K
RS 485	R

10 Firing

Description code	Numeric code
Delayed Triggering + Burst Firing DT+BF (8 cycles at 50% power demand)	D
Phase Angle PA	P
Soft Start + Phase Angle S+PA	E

11 Control Mode

Description code	Numeric code
Open Loop	0
Voltage Feedback V	U
Power Feedback VxI	W
Voltage Square V²	Q
Current Feed Back I	I

12 Fuse & Option

Description Code	Numeric Code
For all units .=< 40A	
Fuse + Fuse Holder + CT Standard	Y
Fuse + Fuse Holder + CT + HB with screw Terminal	H
For all units > 40 A	
Fixed Fuse + CT	Y
Fixed Fuse + CT + HB	H

13 Fan Voltage

Description code	Numeric code
No Fan < 120A	0
Fan 110V > 90A	1
Fan 220V > 90A Std Version	2

14 Approvals

Description code	Numeric code
CE EMC For European Market	0
cUL For American Market (Pending)	L

15 Manual

Description code	Numeric code
None	0
Italian Manual	1
English Manual	2
German Manual	3
French Manual	4

16 Version

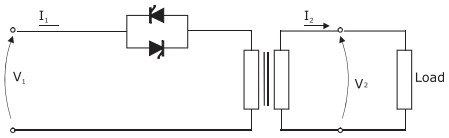
Description code	Numeric code
Std with fuse + fuse holder up to 40A	1
Second fuse normally used with phase to phase voltage supply	2 (4)
Second fuse with an additional safety elettromechanichal relay to open in alarm conditions	3 (4)

LEGEND
IFH = Integrated Fuse + Fuse Holder
IF = Internal Fixed Fuse
CT = Current Transformer
HB = Heater Break Alarm

Note (1): Fuse & Fuse Holder are included as std up to 40A. Fixed Fuses for all other rating
Note (2): After 16th digit, write current and voltage of load inside brackets. Ex (190A-400V)
Note (3): Load voltage must be included in Selected Auxiliary Voltage Range
Note (4): This option is possible with unit up to 40A. Dimension equal THYRISTOR HM2-2PH of same rating.

Thyristor Unit connected with Transformers

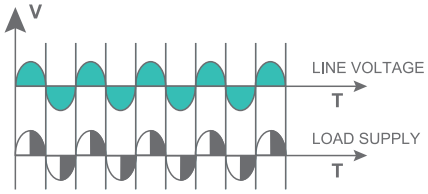
THYRISTOR HCL has been specifically designed to drive transformers and has all the drive capability & techniques required, configurable from the front panel display.



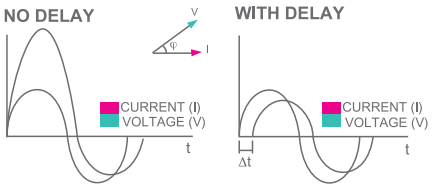
Close examination of the transformer application needs to be made as the typical inrush current, when switched on.
This over-current will have the result to damage Fuses or Thyristor.
To avoid this peak current two techniques can be used:

- Phase angle firing with soft start and current limit. This type of firing can be used with all types of loads.

  - Normal resistance.
  - Cold resistance (Example: Kanthall Super elements).
  - Transformer coupled with normal or cold resistance.
  - With cold resistance use I feed-back.

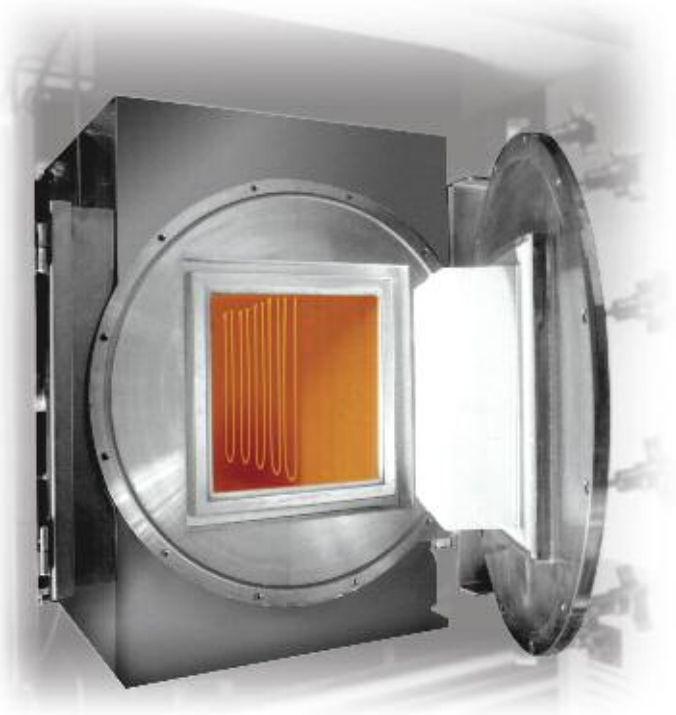


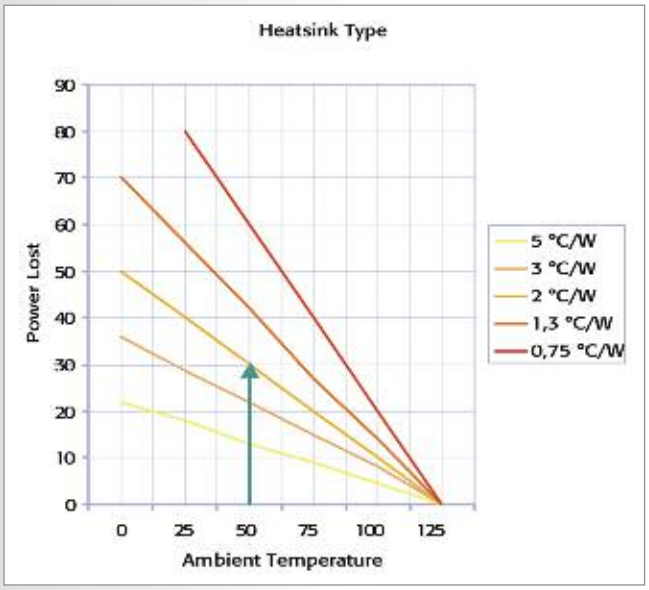
- Burst firing using the Delay Triggering (DT) technique. To avoid magnetic circuit saturation, the thyristor unit will switch OFF when the load voltage is negative and switch ON again when positive. The unit also has an adjustable delay on voltage zero crossing. In this way it is possible to switch ON when current is zero. This Firing technique can only be used with normal resistance, where its resistive value remains constant with temperature variations.



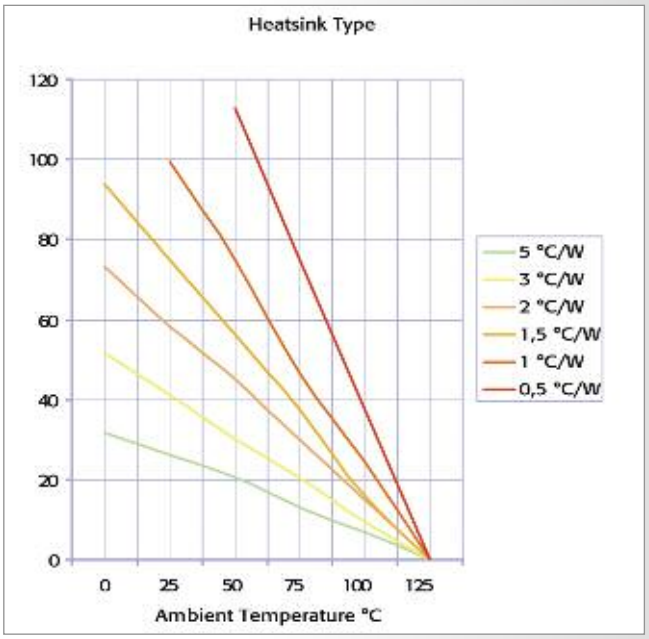
The BIG advantage with THYRISTOR HCL
Buy one unit and you remove all application risks, selecting Phase Angle or Delayed Triggering as required via frontal Key Pad.

Resistivity of some typical cold resistance

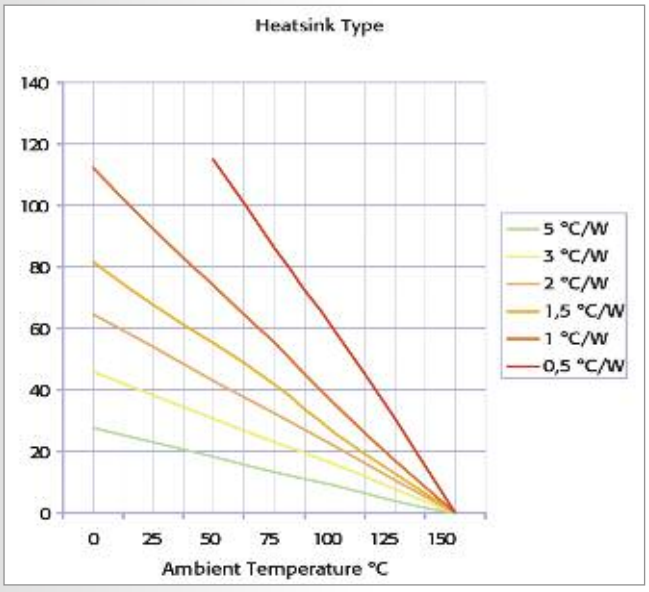




Power Dissipation versus on state Current and ambient Temperature



Power Dissipation versus on state Current and ambient Temperature

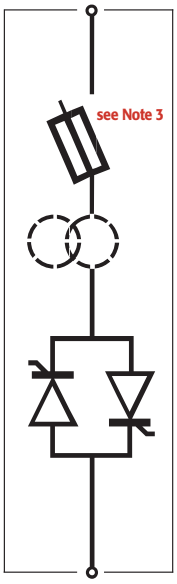


Power Dissipation versus on state Current and ambient Temperature

THYRISTOR HS1-1PH

SIZE SR6

SIZE S12



Technical Specification

- **Dimensions:** See size and dimensions at page 10-11.
- **Load type:** Normal resistance, infrared long and medium waveform.
- **Inputs:** SSR Standard, 0:10V, 4:20mA and Heater Break alarm are options.
- **Firing mode:** Zero Crossing, Burst Firing available with analogue input only.
- **Operating temperature:** 0 to 40°C without derating.
- **Comply with EMC and cUL (Pending).**
- **Data sheet:** More details on "THYRISTOR HS1-1PH" Bulletin.

Option

Analog input: 4/20 mA or 0/10V

Heater Break Alarm + Current Transformer

Current Transformer only mounted inside

	1	2	3	4	5	6		7	8	9	10	11	12	13	14	15	16
THYRISTOR HS1-1PH	H	S	1	_	_	_	-	_	_	_	_	_	_	_	_	_	_

4, 5, 6 Current

Description code	Numeric code
30A	0 3 0
35A	0 3 5
40A	0 4 0
60A	0 6 0
90A	0 9 0
120A	1 2 0
150A	1 5 0
180A	1 8 0
210A	2 1 0
280A	2 8 0
400A	4 0 0
500A	5 0 0
600A	6 0 0
700A	7 0 0

7 Max Voltage

Description code	Numeric code
480V	4
600V	6
690V	7 (7)

8 Aux. Voltage supply

Description code	Numeric code
No auxiliary voltage without HB and/or Analog input up to 210 A included	0
With HB and/or Analog input on all unit = < 210A Aux. Volt 12:24V ac-dc	4
For all units > 210A with whichever options and inputs 90:130V	1 (5)
170:265V	2 (5)
230:345V	3 (5)
300:530V	5 (5)
510:690V	6 (5)
600:760V	7 (5)

9 Input

Description code	Numeric code
SSR	S
0:10V dc	V
4:20mA	A

10 Firing

Description code	Numeric code
Zero Crossing ZC	Z (6)
Burst Firing 4 Cycles On at 50% Power Demand	4 (4)
Burst Firing 8 Cycles On at 50% Power Demand	8 (4)
Burst Firing 16 Cycles On at 50% Power Demand	6 (4)

11 Control Mode

Description code	Numeric code
Open Loop	0

12 Fuse & Option

Description code	Numeric code
For All Units = < 40A No Fuse	O
Fuse & Fuse Holder	F
Fuse & Fuse Holder + CT	Y
Fuse & Fuse Holder + CT + HB	H
Fuse & Fuse Holder + CT + HB with flat cable connection	X
For All Units > 40A Fix Fuse Standard	F (3)
Fix Fuse Standard + CT	Y
Fix Fuse Standard + CT + HB	H

13 Fan Voltage

Description code	Numeric code
No Fan < 120A	0
Fan 110V > 90A	1
Fan 220V > 90A Std Version	2

14 Approvals

Description code	Numeric code
CE EMC For European Market	0
cUL For American Market (Pending)	L

15 Manual

Description code	Numeric code
None	0
Italian Manual	1
English Manual	2
German Manual	3
French Manual	4

16 Version

Description code	Numeric code
Standard unit with one fuse only	1
Units with 2 Fuses + Fuse Holder = < 40A	2 (1)
Units with 2 fuses + Fuse Holder + Safety relay + fuse = < 40A	3 (2)

LEGEND CT = Current Transformer HB = Heater Break Alarm

Note (1): If you need one THYRISTOR HS1-1PH with 2 Fuse&Fuse Holder. For dimensions see THYRISTOR HS2-2PH. This solution can be used up to 40A max.

Note (2): If you need one THYRISTOR HS1-1PH with 2 Fuse&Fuse Holder + safety relay. For dimensions see THYRISTOR HS2-2PH. This solution can be used up to 40A max.

Note (3): Fixed Fuses over 40A.

Note (4): Available only with Analog input.

Note (5): Load voltage must be included in Selected Auxiliary Voltage Range for units >210A.

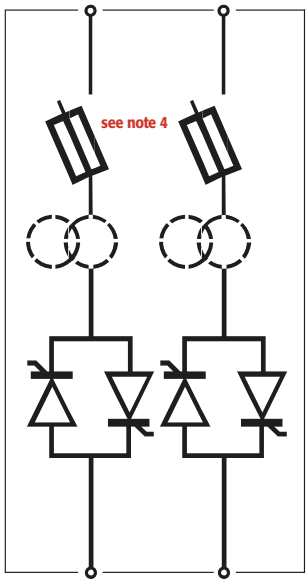
Note (6): With 690V the firing is random.

Note (7): Available on unit >280A.

THYRISTOR HS2-2PH

SIZE SR7

SIZE S14



Technical Specification

- **Dimensions:** See size and dimensions at page 10-11.
- **Load type:** Normal resistance, infrared long and medium waveform.
- **Inputs:** SSR Standard, 0:10V, 4:20mA and Heater Break alarm are options.
- **Firing mode:** Zero Crossing, Burst Firing available with analogue input only.
- **Operating temperature:** 0 to 40°C without derating.
- **Comply with EMC and cUL (Pending).**
- **Data sheet:** More details on "THYRISTOR HS2-2PH" Bulletin.

Option

Analog input: 4/20 mA or 0/10V

Current Transformer only mounted inside

Current Transformer+ HB Alarm

	1	2	3	4	5	6		7	8	9	10	11	12	13	14	15	16
THYRISTOR HS2-2PH	H	S	2	_	_	_	-	_	_	_	_	_	_	_	_	_	_

4,5,6 Current

Description code	Numeric code
30A	0 3 0
35A	0 3 5
40A	0 4 0
60A	0 6 0
90A	0 9 0
120A	1 2 0
150A	1 5 0
180A	1 8 0
210A	2 1 0
280A	2 8 0
400A	4 0 0
450A	4 5 0
500A	5 0 0
600A	6 0 0
700A	7 0 0

7 Max Voltage

Description code	Numeric code
480V	4
600V	6
690V	7 (5)

8 Aux. Voltage Supply

Description code	Numeric code
No auxiliary voltage without HB and/or Analog input up to 210 A included	0
With HB and/or Analog input on all unit = < 210A Aux. Volt 12:24V ac-dc	4
For all units > 210 A with whichever options and inputs 90:130V	1 (3)
170:265V	2 (3)
230:345V	3 (3)
300:530V	5 (3)
510:690V	6 (3)
600:760V	7 (3)

9 Input

Description code	Numeric code
SSR	S
0:10V	V
4:20mA	A

10 Firing

Description code	Numeric code
Zero Crossing ZC	Z
Burst Firing 4 Cycles On at 50% Power Demand	4 (2)
Burst Firing 8 Cycles On at 50% Power Demand	8 (2)
Burst Firing 16 Cycles On at 50% Power Demand	6 (2)

11 Control Mode

Description code	Numeric code
Open Loop	0

12 Fuse & Option

Description code	Numeric code
For All Units = < 40A No Fuse	O
Fuse & Fuse Holder	F
Fuse & Fuse Holder + CT	Y
Fuse & Fuse Holder + CT + HB with terminals	H
Fuse & Fuse Holder + CT + HB with flat cable connection	X
For All Units > 40A Fixed Fuse Standard	F (4)
Fixed Fuse Standard + CT	Y
Fixed Fuse Standard + CT + HB	H

13 Fan Voltage

Description code	Numeric code
Fan < 90A	0
Fan 110V = > 90A	1
Fan 220V = > 90A Std Version	2

14 Approvals

Description code	Numeric code
CE EMC For European Market	0
cUL For American Market (pending)	L

15 Manual

Description code	Numeric code
None	0
Italian Manual	1
English Manual	2
German Manual	3
French Manual	4

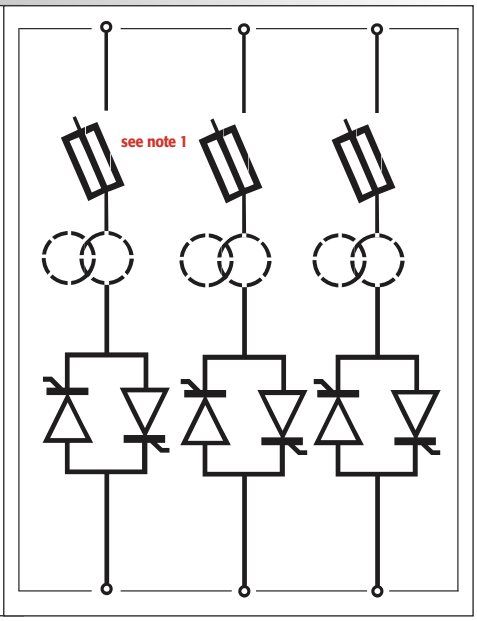
16 Version

Description code	Numeric code
Std Version with two Fuses + Fuses Holder = < 40A	1
Standard unit with two fixed fuses > 40A	1
Units with 3 fuses + Fuses Holder = < 40A	2 (1)

LEGEND CT = Current Transformer HB = Heater Break Alarm

Note (1): If you need one THYRISTOR HS2-2PH with 3 Fuse & Fuse Holder. For dimensions see THYRISTOR HS3-3PH. This solution can be used up to 40A max.
Note (2): Available with Analog input only.
Note (3): Load voltage must be included in Selected Auxiliary Voltage Range for unit > 210A.
Note (4): Fixed Fuses over 40A.
Note (5): Available on unit > 280A.

THYRISTOR HS3- 3PH



Technical Specification

- **Dimensions:** See size and dimensions at page 10-11.
- **Load type:** Normal resistance, infrared long and medium waveform.
- **Inputs:** SSR Standard, 0:10V, 4:20mA and Heater Break alarm are options.
- **Firing mode:** Zero Crossing, Burst Firing available with analogue input only.
- **Operating temperature:** 0 to 40°C without derating.
- **Comply with EMC and cUL (Pending).**
- **Data sheet:** More details on "THYRISTOR HS3-3PH" Bulletin.

Option

Analog input: 4/20 mA or 0/10V

Current Transformer only mounted inside

Current Transformer + HB alarm

	1	2	3	4	5	6		7	8	9	10	11	12	13	14	15	16
THYRISTOR HS3-3PH	H	S	3	_	_	_	-	_	_	_	_	_	_	_	_	_	_

4, 5, 6 Current

Description code	Numeric code
30A	0 3 0
35A	0 3 5
40A	0 4 0
60A	0 6 0
90A	0 9 0
120A	1 2 0
150A	1 5 0
180A	1 8 0
210A	2 1 0
225A	2 2 5
300A	3 0 0
350A	3 5 0
400A	4 0 0
450A	4 5 0
500A	5 0 0

7 Max Voltage

Description code	Numeric code
480V	4
600V	6
690V	7 (5)

8 Aux. Voltage Supply

Description code	Numeric code
No auxiliary voltage without HB and/or Analog input for all units up to 210 A included	0
With HB and/or Analog input on all units < 210A Aux. Volt.12:24V ac-dc	4
For all units > 210 A with whichever options and inputs	
90:130V	1 (4)
170:265V	2 (4)
230:345v	3 (4)
300:530V	5 (4)
510:690V	6 (4)
600:760V	7 (4)

9 Input

Description code	Numeric code
SSR	S
0:10V dc	V
4:20mA	A

10 Firing

Description code	Numeric code
Zero Crossing ZC	Z
Burst Firing 4 Cycles On at 50% Power Demand	4 (2)
Burst Firing 8 Cycles On at 50% Power Demand	8 (2)
Burst Firing 16 Cycles On at 50% Power Demand	6 (2)

11 Control Mode

Description code	Numeric code
Open Loop	0

12 Fuse & Options

Description code	Numeric code
For all units = < 40 A No fuse	0
Fuse & Fuse Holder	F
Fuse & Fuse Holder + CT	Y
Fuse & Fuse Holder + CT + HB with terminals	H
Fuse & Fuse Holder + CT + HB with flat cable connection	X (3)
For all units > 40A Fixed Fuse Standard	F (1)
Fixed Fuse Standard + CT	Y
Fixed Fuse Standard + CT + HB	H

13 Fan Voltage

Description code	Numeric code
No Fan < 90A	0
Fan 110V = > 90A	1
Fan 220V = > 90A Std Version	2

14 Approvals

Description code	Numeric code
CE EMC For European Market	0
cUL For American Market (pending)	L

15 Manual

Description code	Numeric code
None	0
Italian Manual	1
English Manual	2
German Manual	3
French Manual	4

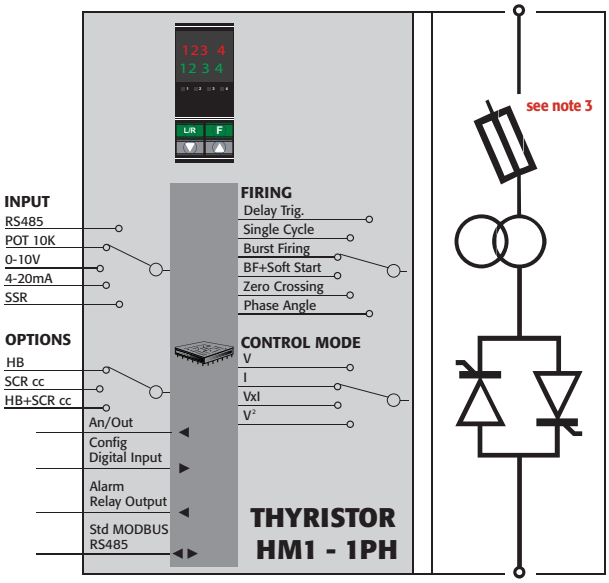
16 Version

Description code	Numeric code
Std. Version	1

LEGEND
IFH = Integrated Fuse + Fuse Holder
IF = Internal Fixed Fuse CT = Current Transformer HB = Heater Break Alarm

Note (1): Fixed Fuses over 40A.
Note (2): Available with Analog input only.
Note (3): Available up to 40A only flat cable connection.
Note (4): Load voltage must be included in Selected Auxiliary Voltage Range for units > 210A.
Note (5): Available on unit = > 225A.

THYRISTOR HM1-1PH



Technical Specification

- **Dimensions:** See size and dimensions at page 10-11.
- **Load type:** Normal resistance, infrared short long and medium waveform, Silicon Carbide.
- **Inputs:** 0:10V dc, 4:20mA, 10kpot, SSR, RS485.
- **Firing mode:** Zero Crossing, Burst Firing, Single Cicle, Soft Start + Phase Angle, Delayed Triggering.
- **Operating temperature:** 0 to 40°C without derating.
- **Control mode:** V Voltage, VxI Power, I and $V^{2.}$
- **RS485 port. RTU Modbus Protocol.**
- **Comply with EMC and cUL (Pending).**
- **Data sheet:** More details on "THYRISTOR HM1-1PH" bulletin.

Option

HB + CT : Current transformer plus HB Alarm

Control Mode Retransmission

Note 5

	1	2	3	4	5	6		7	8	9	10	11	12	13	14	15	16
THYRISTOR HM1-1PH	H	M	1	_	_	_	-	_	_	_	_	_	_	_	_	_	_

4, 5, 6 Current

Description code	Numeric code
35A	0 3 5
40A	0 4 0
60A	0 6 0
90A	0 9 0
120A	1 2 0
150A	1 5 0
180A	1 8 0
210A	2 1 0
280A	2 8 0
400A	4 0 0
500A	5 0 0
600A	6 0 0
700A	7 0 0

7 Max Voltage

Description code	Numeric code
480V	4
600V	6
690V	7 (4)

8 Aux. Voltage supply

Description code	Numeric code
90:130V	1 (6)
170:265V	2 (6)
230:345V	3 (6)
300:530V	5 (6)
510:690V	6 (6)
600:760V	7 (6)

9 Input

Description code	Numeric code
SSR	S
0:10V dc	V
4:20mA	A
10KPot	K
RS485	R

10 Firing

Description code	Numeric code
Zero Crossing ZC	Z
Single Cycle SC	C
Burst Firing BF	B
Soft Start + Burst Firing S+BF	J
Delayed Triggering + Burst Firing DT+BF	D
Phase Angle PA	P
Soft Start + Phase Angle S+PA	E

11 Control Mode

Description code	Numeric code
Open Loop	0
Voltage Feedback	U
Power Feedback	W
Current Feedback	I
Voltage Square Feed Back	Q
Voltage to Power Feed Back transfer	T

12 Fuse & Option

Description code	Numeric code
For All Units = < 40A Fuse & Fuse Holder + CT	Y
Fuse & Fuse Holder + CT + HB with terminals	H
For All Units > 40A Fixed Fuse Standard + CT	Y (3)
Fixed Fuse Standard + CT + HB	H
Control Mode Retransmission 4:20mA	A
Control Mode Retransmission 0:10V	V

13 Fan Voltage

Description code	Numeric code
No Fan < 120A	0
Fan 110V > 90A	1
Fan 220V > 90A Std Version	2

14 Approvals

Description code	Numeric code
CE EMC For European Market	0
cUL For American Market (Pending)	L

15 Manual

Description code	Numeric code
None	0
Italian Manual	1
English Manual	2
German Manual	3
French Manual	4

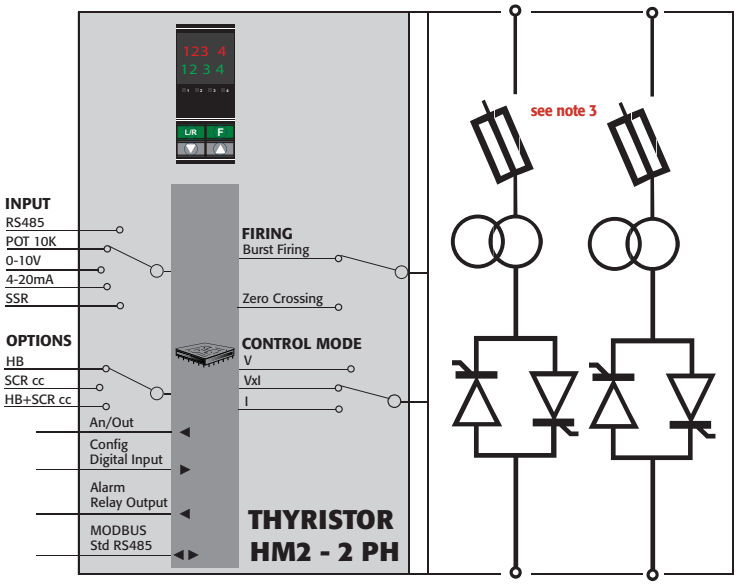
16 Version

Description code	Numeric code
Standard unit with 1 Fuse	1
Unit with 2 Fuse + Fuse Holders = < 40A	2 (1)
Units with 2 Fuses + Fuse Holder + Safety Relay = < 40A	3 (2)

LEGEND
CT = Current Transformer
HB = Heater Break Alarm

Note (1): If you need one THYRISTOR HM1-1PH with 2 Fuse & Fuse Holder. For dimensions see THYRISTOR HM2-2PH. This solution can be used up to 40A max.
Note (2): If you need one THYRISTOR HM1-1PH with 2 Fuse & Fuse Holder + safety relay. For dimensions see THYRISTOR HM2-2PH. This solution can be used up to 40A max.
Note (3): Fixed Fuse over 40A.
Note (4): Available on units ≥ 400A.
Note (5): After 16th digit write current and voltage of load inside brackets Ex. (190A-400V).
Note (6): Load voltage must be included in Selected Auxiliary Voltage Range.

THYRISTOR HM2-2PH



Technical Specification

- **Dimensions:** See size and dimensions at page 10-11.
- **Load type:** Normal resistance, infrared long and medium waveform, Silicon Carbide.
- **Inputs:** 0-10V dc, 4-20mA, 10kpot, SSR, RS485.
- **Firing mode:** Zero Crossing, Burst Firing.
- **Operating temperature:** 0 to 40°C without derating.
- **Control mode:** V Voltage, VxI Power.
- **RS485 port. RTU Modbus Protocol.**
- **Comply with EMC and cUL (Pending).**
- **Data sheet:** More details on "THYRISTOR HM2-2PH" bulletin.

Option

HB + CT : Current transformer plus HB Alarm

Control Mode Retransmission

Note 4

	1	2	3	4	5	6		7	8	9	10	11	12	13	14	15	16
THYRISTOR HM2-2PH	H	M	2	_	_	_	-	_	_	_	_	_	_	_	_	_	_

4,5,6 Current

Description code	Numeric code
30A	0 3 0
35A	0 3 5
40A	0 4 0
60A	0 6 0
90A	0 9 0
120A	1 2 0
150A	1 5 0
180A	1 8 0
210A	2 1 0
280A	2 8 0
400A	4 0 0
450A	4 5 0
500A	5 0 0
600A	6 0 0
700A	7 0 0

7 Max Voltage

Description code	Numeric code
480V	4
600V	6
690V Available on units ≥ 400A	7 (2)

8 Aux. Voltage supply

Description code	Numeric code
90:130V	1 (5)
170:265V	2 (5)
230:345V	3 (5)
300:530V	5 (5)
510:690V	6 (5)
600:760V	7 (5)

9 Input

Description code	Numeric code
SSR	S
0:10V dc	V
4:20mA	A
10KPot	K
RS485	R

10 Firing

Description code	Numeric code
Zero Crossing ZC	Z
Burst Firing BF	B

11 Control Mode

Description code	Numeric code
Open Loop	0
Voltage Feedback V	U
Power Feedback VxI	W
Current Feedback I	I

12 Fuse & Option

Description code	Numeric code
For All Units = < 40A Fuse & Fuse Holder + CT	Y
Fuse & Fuse Holder + CT + HB with terminals	H
Fuse & Fuse Holder + CT + HB with flat cable	X
For All Units > 40A Fixed Fuse Standard + CT	Y (3)
Fixed Fuse Standard + CT + HB	H
Control Mode Retransmission 4:20mA	A
Control Mode Retransmission 0:10V	V

13 Fan Voltage

Description code	Numeric code
No Fan < 90A	0
Fan 110V = > 90A	1
Fan 220V = > 90A Std Version	2

14 Approvals

Description code	Numeric code
CE EMC For European Market	0
cUL For American Market (Pending)	L

15 Manual

Description code	Numeric code
None	0
Italian Manual	1
English Manual	2
German Manual	3
French Manual	4

16 Version

Description code	Numeric code
Standard Unit with 2 Fuses + Fuse Holders = < 40A	1 (1)
Standard Unit > 40A with two fixed Fuses	1
Units with 3 Fuses & Fuse Holder = < 40A	2 (1)

LEGEND HB = Heater Break Alarm CT = Current Transformer

Note (1): If you need one THYRISTOR HM2-2PH with 3 Fuse & Fuse Holder. For dimensions see THYRISTOR HM3-3PH. This solution can be used up to 40A max.

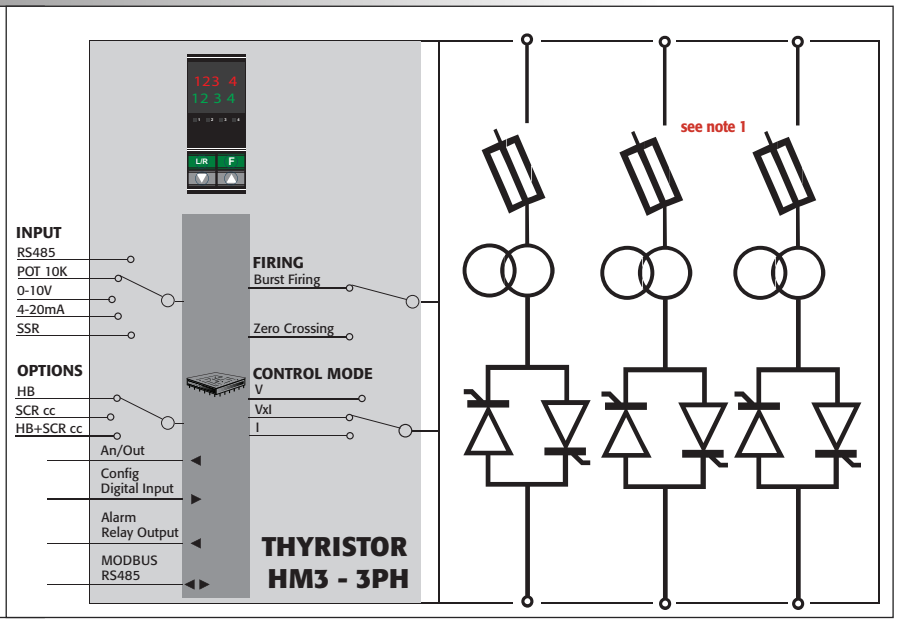
Note (2): Available on units ≥ 400A.

Note (3): Fixed Fuses over 40A.

Note (4): After 16th digit write current and voltage of load inside brackets Ex. (190A-400V).

Note (5): Load voltage must be included in Selected Auxiliary Voltage Range.

THYRISTOR HM3-3PH



Technical Specification

- **Dimensions:** See size and dimensions at page 10-11.
- **Load type:** Normal resistive, infrared long and medium waveform, Silicon Carbide.
- **Inputs:** 0-10V dc, 4-20mA, 10kpot, SSR, RS485.
- **Firing mode:** Zero Crossing, Burst Firing.
- **Operating temperature:** 0 to 40°C without derating.
- **Control mode:** V Voltage, VxI Power.
- **RS485 port. RTU Modbus Protocol.**
- **Comply with EMC and cUL (Pending).**
- **Data sheet:** More details on "THYRISTOR HM3-3PH" bulletin.

Option

HB + CT: Current transformer plus HB Alarm

Control Mode Retransmission

Note 2

	1	2	3	4	5	6		7	8	9	10	11	12	13	14	15	16
THYRISTOR HM3-3PH	H	M	3	_	_	_	-	_	_	_	_	_	_	_	_	_	_

4,5,6 Current

Description code	Numeric code
30A	0 3 0
35A	0 3 5
40A	0 4 0
60A	0 6 0
90A	0 9 0
120A	1 2 0
150A	1 5 0
180A	1 8 0
210A	2 1 0
225A	2 2 5
300A	3 0 0
350A	3 5 0
400A	4 0 0
450A	4 5 0
500A	5 0 0

7 Max Voltage

Description code	Numeric code
480V	4
600V	6
690V Available on units ≥ 225A	7

LEGEND
CT = Current Transformer
HB = Heater Break Alarm

8 Aux. Voltage supply

Description code	Numeric code
90:130V	1 (3)
170:265V	2 (3)
230:345V	3 (3)
300:530V	5 (3)
510:690V	6 (3)
600:760V	7 (3)

9 Input

Description code	Numeric code
SSR	S
0:10V dc	V
4:20mA	A
10KPot	K
RS485	R

10 Firing

Description code	Numeric code
Zero Crossing ZC	Z
Burst Firing BF	B

11 Control Mode

Description code	Numeric code
Open Loop	0
Voltage Feedback V	U
Power Feedback VxI	W
Current Feedback I	I

12 Fuse & Option

Description code	Numeric code
For all units = < 40A Fuse & Fuse Holder + CT	Y
Fuse & Fuse Holder + CT + HB with terminals	H
Fuse & Fuse Holder + CT + HB with flat cable	X
For all units = > 40A Fixed Fuse Standard + CT	Y (1)
Fixed Fuse Standard + CT + HB	H
Control Mode Retransmission 4:20mA	A
Control Mode Retransmission 0:10V	V

13 Fan Voltage

Description code	Numeric code
No Fan < 90A	0
Fan 110V = > 90A	1
Fan 220V = > 90A Std Version	2

14 Approvals

Description code	Numeric code
CE EMC For European Market	0
cUL For American Market (Pending)	L

15 Manual

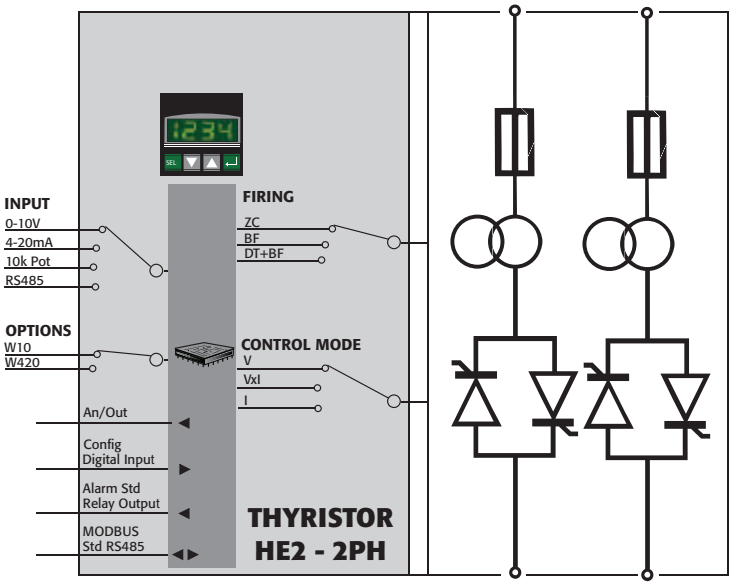
Description code	Numeric code
None	0
Italian Manual	1
English Manual	2
German Manual	3
French Manual	4

16 Version

Description code	Numeric code
Version Std with 3 fuses	1

Note (1): Fixed Fuses over 40A.
Note (2): After 16th digit write current and voltage of load inside brackets Ex. (190A-400V).
Note (3): Load voltage must be included in Selected Auxiliary Voltage Range.

THYRISTOR HE2-2PH



Technical Specification

- **Dimensions:** See size and dimensions at page 10-11.
- **Load type:** Normal resistance, three phase transformer, coupled with normal resistance.
- **Inputs:** 0-10V dc, 4-20mA, 10k Pot, SR485.
- **Firing mode:** Zero Crossing, Burst Firing, DT+BF (not with cold resistance).
- **Operating temperature:** 0° to 40°C without derating.
- **Control mode:** V Voltage, VxI Power, Open Loop.
- **RS485 port. RTU Modbus Protocol.**
- **Comply with EMC and cUL (Pending).**
- **Data sheet:** More details on "THYRISTOR HE2-2PH" bulletin.

Option

No options, all included

Note 2

	1	2	3	4	5	6		7	8	9	10	11	12	13	14	15	16
THYRISTOR HE2-2PH	H	E	2	_	_	_	-	_	_	_	_	_	_	_	_	_	_

4, 5, 6 Current

Description code	Numeric code
25A	0 2 5
35A	0 3 5
45A	0 4 5
75A	0 7 5
100A	1 0 0
125A	1 2 5
150A	1 5 0
225A	2 2 5
300A	3 0 0
350A	3 5 0
400A	4 0 0
450A	4 5 0
500A	5 0 0
700A	7 0 0

7 Max Voltage

Description code	Numeric code
480V	4
600V	6

8 Aux. Voltage supply

Description code	Numeric code
110V	1
230V	2

9 Input

Description code	Numeric code
SSR 3:30V dc	S
0:10V	V
4:20mA	A
10KPot	K
RS485	R

10 Firing

Description code	Numeric code
Zero Crossing ZC	Z
Single Cycle SC	C
Burst Firing BF	B
Soft Start + Burst Firing S+BF	J
Delayed Triggering + Burst Firing DT+BF	D (2)

11 Control Mode

Description code	Numeric code
Open Loop	0
Voltage Feedback V	U
Power Feedback VxI	W
Current Feedback I	I

12 Option

Description code	Numeric code
Control Mode Retransmission 4:20mA	A
Control Mode Retransmission 0:10V	V

13 Fan Voltage

Description code	Numeric code
Fan Voltage equal to Aux. Voltage	3

LEGEND
IF = Internal Fixed Fuse
CT = Current Transformer
HB = Heater Break Alarm

14 Approvals

Description code	Numeric code
CE EMC For European Market	0
cUL For American Market (Pending)	L

15 Manual

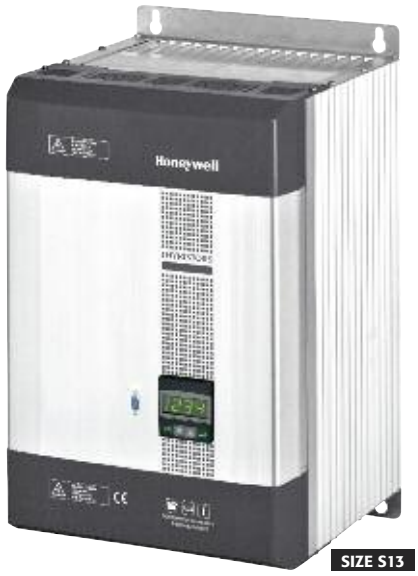
Description code	Numeric code
None	0
Italian Manual	1
English Manual	2
German Manual	3
French Manual	4

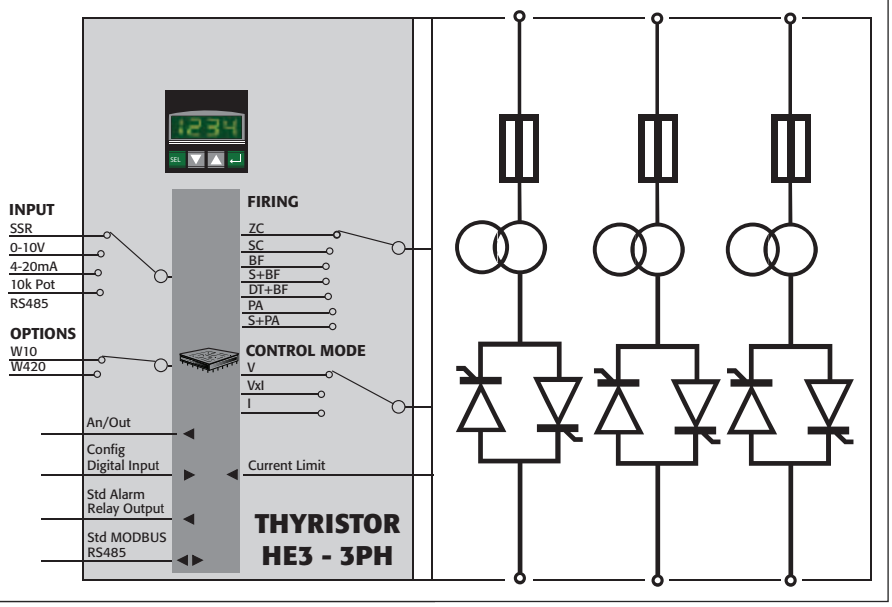
16 Load type/Connection

Description code	Numeric code
Resistive Load/ Delta Connection	1
Resistive Load/ Star Connection	2
Resistive Load/ Star Connection + Neutral	7
Transformer Load/ Delta Connection	3
Transformer Load/ Star Connection	4

Note (1): DT + BF can be used to drive transformers coupled with normal resistance.
Note (2): After 16th digit write current and voltage of load inside brackets Ex. (190A-400V). Required if units are to be tuned to load.

THYRISTOR HE3-3PH





Technical Specification

- **Dimensions:** See size and dimensions at page 10-11.
- **Load type:** Normal resistance, three phase transformer coupled with normal or cold resistance.
- **Inputs:** None, SSR, 0-10V, 4-20mA, 10kpot, RS485 communication.
- **Firing mode:** Zero Crossing, Single Cycle, Burst Firing, Soft Start + Burst Firing, Delayed Triggering + Burst Firing, Phase Angle, Soft Start + Phase Angle.
- **Operating temperature:** 0° to 40°C without derating.
- **Control mode:** V, VxI, I.
- **RS485 RTU port. Modbus Protocol.**
- **Comply with EMC and cUL (Pending).**
- **Data sheet:** More details on "THYRISTRO HE3-3PH" bulletin.

Option

No options, all included

Note 1

	1	2	3	4	5	6		7	8	9	10	11	12	13	14	15	16
THYRISTOR HE3-3PH	H	E	3	_	_	_	-	_	_	_	_	_	_	_	_	_		_

4, 5, 6 Current

Description code	Numeric code
25A	0 2 5
35A	0 3 5
45A	0 4 5
75A	0 7 5
100A	1 0 0
125A	1 2 5
150A	1 5 0
225A	2 2 5
300A	3 0 0
350A	3 5 0
400A	4 0 0
450A	4 5 0
500A	5 0 0

7 Max Voltage

Description code	Numeric code
480V	4
600V	6

8 Aux. Voltage supply

Description code	Numeric code
110V	1
230V	2

9 Input

Description code	Numeric code
SSR 3:30V dc	S
0:10V	V
4:20mA	A
10KPot	K
RS485	R

10 Firing

Description code	Numeric code
Zero Crossing ZC	Z
Single Cycle SC	C
Burst Firing BF	B
Soft Start + Burst Firing S+BF	J
Delayed Triggering + Burst Firing DT+BF	D (2)
Phase Angle PA	P
Soft Start + Phase Angle S+PA	E

11 Control Mode

Description code	Numeric code
Open Loop	0
Voltage Feedback V	U
Power Feedback VxI	W
Current Feedback I	I

12 Option

Description code	Numeric code
Control Mode Retransmission 4:20mA	A
Control Mode Retransmission 0:10V	V

13 Fan Voltage

Description code	Numeric code
Fan Voltage equal to Aux. Voltage	3

14 Approvals

Description code	Numeric code
CE EMC For European Market	0
cUL For American Market (Pending)	L

15 Manual

Description code	Numeric code
None	0
Italian Manual	1
English Manual	2
German Manual	3
French Manual	4

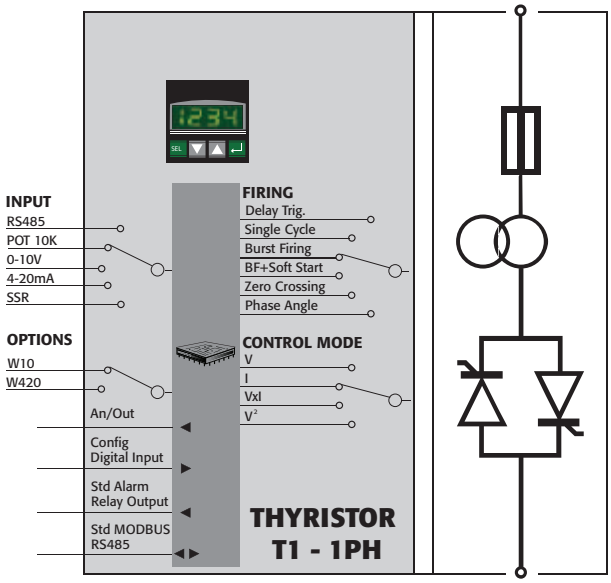
16 Load type/Connection

Description code	Numeric code
Resistive Load/ Delta Connection	1
Resistive Load/ Star Connection	2
Resistive Load/ Star Connection + Neutral	7
Transformer Load/ Delta Connection	3
Transformer Load/ Star Connection	4
Transformer Load/Star Connection + Neutral	5
Resistive Load/ Open delta	6

LEGEND
IF = Internal Fixed Fuse
CT = Current Transformer
HB = Heater Break Alarm

Note (1): After 16th digit write current and voltage of load inside brackets Ex. (190A-400V). Required if units are to be tuned to load.
Note (2): DT+BF can be used to drive transformers coupled with normal resistance.

THYRISTOR T1-1PH



Technical Specification

- **Dimensions:** See size and dimensions at page 10-11.
- **Load type:** Normal resistance, one phase transformer coupled with normal or cold resistance.
- **Inputs:** 0-10V, 4-20mA, 10kpot, RS485 communication, SSR.
- **Firing mode:** Burst Firing, Soft Start + Burst Firing, Delayed Triggering + Burst Firing, Phase Angle, Soft Start + Phase Angle.
- **Operating temperature:** 0° to 40°C without derating.
- **Control mode:** Voltage, Current Power, External signal.
- **RS485 port. RTU Modbus Protocol.**
- **Comply with EMC.**
- **Data sheet:** More details on "THYRISTOR T1-1PH" bulletin.

Option

No options, all included

Note 1

	1	2	3	4	5	6		7	8	9	10	11	12	13	14	15	16
THYRISTOR T1-1PH	T	1	_	_	_	_	-	_	_	_	_	_	_	_	_	_	_

4, 5, 6 Current

Description code	Numeric code
850A	0 8 5 0
1000A	1 0 0 0 (2)
1400A	1 4 0 0
1500A	1 5 0 0 (2)
1850A	1 8 5 0
2000A	2 0 0 0 (2)
2400A	2 4 0 0
2700A	2 7 0 0 (2)

7 Max Voltage

Description code	Numeric code
480V	4
600V	6
690V	7

8 Aux. Voltage supply

Description code	Numeric code
110V	1
230V	2

9 Input

Description code	Numeric code
SSR 3:30V dc	S
0:10V	V
4:20 mA	A
10 K Pot	K
RS485	R

10 Firing

Description code	Numeric code
Burst Firing BF	B
Soft Start + Burst Firing S+BF	J
Delayed Triggering + Burst Firing DT+BF	D
Phase Angle PA	P
Soft Start + Phase Angle S+PA	E

11 Control Mode

Description code	Numeric code
Open Loop	0
Voltage Feedback V	U
Power Feedback Vxl	W
Current Feedback I	I
External Feedback	E

12 Option

Description code	Numeric code
4:20mA Retransmission	A (3)
0:10V Retransmission	V (3)

13 Fan Voltage

Description code	Numeric code
Fan Voltage equal to Aux. Voltage	3

14 Approvals

Description code	Numeric code
CE EMC For European Market	E

15 Manual

Description code	Numeric code
None	0
Italian Manual	1
English Manual	2
German Manual	3
French Manual	4

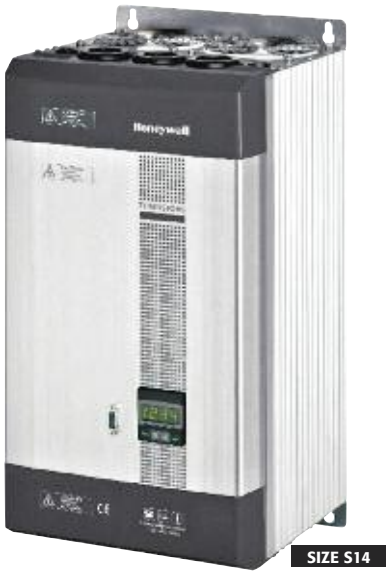
16 Load type

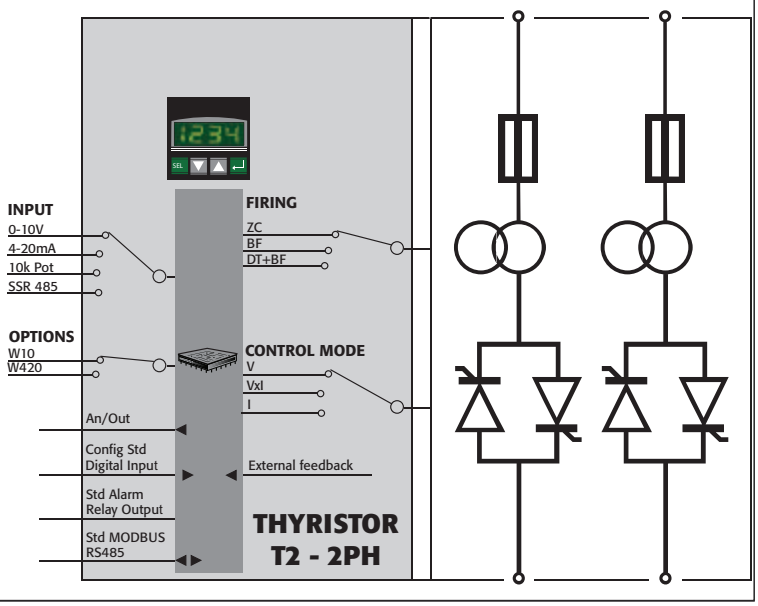
Description code	Numeric code
Resistive Load	8
Transformer	9

LEGEND
IF = Internal Fixed Fuse
CT = Current Transformer
HB = Heater Break Alarm

Note (1): After 16th digit write current and voltage of load inside brackets Ex. (190A-400V). This is to receive the Thyristor unit already tuned from Honeywell.
Note (2): Rating not available at 690V.
Note (3): In total are available 4 Analog Output. One dedicated to Control Mode and the other 3 dedicated to Current, Voltage etc.

THYRISTOR T2-2PH





Technical Specification

- **Dimensions:** See size and dimensions at page 10-11.
- **Load type:** Normal resistance, three phase transformer coupled with normal resistance.
- **Inputs:** 0-10V, 4-20mA, 10kpot, RS485 communication, SSR.
- **Firing mode:** Zero Crossing, Burst Firing, Delayed Triggering + Burst Firing (not with cold resistance).
- **Operating temperature:** 0° to 40°C without derating.
- **Control mode:** V Voltage, VxI Power and open loop.
- **RS485 port. RTU Modbus Protocol.**
- **Comply with EMC and cUL (Pending).**
- **Data sheet:** More details on "THYRISTOR T2-2PH" bulletin.

Option

No options, all included

Note 1

	1	2	3	4	5	6		7	8	9	10	11	12	13	14	15	16
THYRISTOR T2-2PH T	2	_	_	_	_	-	_	_	_	_	_	_	_	_	_		_

4, 5, 6 Current

Description code	Numeric code
35A	0035
45A	0045
75A	0075
100A	0100
125A	0125
150A	0150
225A	0225
280A	0280
400A	0400
450A	0450
500A	0500
600A	0600
700A	0700
850A	0850
1000A	1000 (2)
1400A	1400
1500A	1500 (2)
1850A	1850
2000A	2000 (2)
2400A	2400
2700A	2700 (2)

7 Max Voltage

Description code	Numeric code
480V	4
600V	6
690V	7

8 Aux. Voltage supply

Description code	Numeric code
110V	1
230V	2

9 Input

Description code	Numeric code
SSR 3:30V dc	S
0:10V	V
4:20mA	A
10KPot	K
RS485	R

10 Firing

Description code	Numeric code
Burst Firing BF	B
Delayed Triggering + Burst Firing DT+BF	D

11 Control Mode

Description code	Numeric code
Open Loop	0
Voltage Feed Back V	U
Power Feed Back VxI	W
Current Feed-back I	I

12 Option

Description code	Numeric code
4:20mA Retransmission Load Current and Control Mode	A (3)
0:10V Retransmission Load Current and Control Mode	V (3)

13 Fan Voltage

Description code	Numeric code
Fan Voltage equal to Aux. Voltage	3

14 Approvals

Description code	Numeric code
CE EMC For European Market	0
cUL For American Market up to 700A (Pending)	L (4)

15 Manual

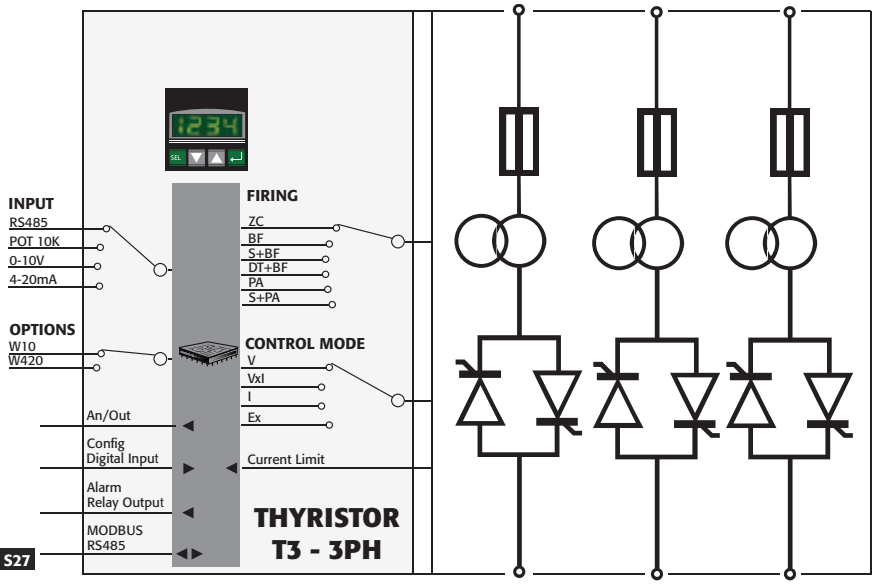
Description code	Numeric code
None	0
Italian Manual	1
English Manual	2
German Manual	3
French Manual	4

16 Load type/Connection

Description code	Numeric code
Resistive Load/ Delta Connection	1
Resistive Load/ Star Connection	2
Transformer Load/ Delta Connection	3
Transformer Load/ Star Connection	4

Note (1): After 16th digit write current and voltage of load inside brackets Ex. (190A-400V). This is to receive the Thyristor unit already tuned from Honeywell.
Note (2): Rating not available at 690V.
Note (3): In total are available 4 Analog output. One dedicated to control mode and the other 3 for current on phases 1-2-3.
Note (4): cUL Approval up to 700A included (Pending).

THYRISTOR T3-3PH



Technical Specification

- **Dimensions:** See size and dimensions at page 10-11.
- **Load type:** Normal resistance, Three phase transformer coupled with normal or cold resistance.
- **Inputs:** 0-10V, 4-20mA, 10kpot, RS485 communication, SSR.
- **Firing mode:** Zero Crossing, Burst Firing, Soft Start + Burst Firing, Phase Angle, Soft Start + Phase Angle and Delayed Triggering.
- **Operating temperature:** 0° to 40°C without derating.
- **Control mode:** Voltage, Power, Current, External Profiling 0:10V, Open Loop.
- **RS485 port. RTU Modbus Protocol.**
- **Comply with EMC and cUL (Pending).**
- **Data sheet:** More details on "THYRISTOR T3-3PH" bulletin.

Option

No options, all included

Note 1

	1	2	3	4	5	6		7	8	9	10	11	12	13	14	15	16
THYRISTOR T3-3PH	T	3	_	_	_	_	-	_	_	_	_	_	_	_	_	_	_

4, 5, 6 Current

Description code	Numeric code
35A	0035
45A	0045
75A	0075
100A	0100
125A	0125
150A	0150
225A	0225
300A	0300
350A	0350
400A	0400
450A	0450
500A	0500
600A	0600
850A	0850
1000A	1000 (2)
1400A	1400
1500A	1500 (2)
1850A	1850
2000A	2000 (2)
2400A	2400
2700A	2700 (2)

7 Max Voltage

Description code	Numeric code
480V	4
600V	6
690V	7

8 Aux. Voltage supply

Description code	Numeric code
110V	1
230V	2

9 Input

Description code	Numeric code
SSR 3:30V dc	S
0:10V	V
4:20mA	A
10KPot	K
RS485	R

LEGEND
IF = Internal Fixed Fuse
CT = Current Transformer
HB = Heater Break Alarm

10 Firing

Description code	Numeric code
Zero Crossing ZC	Z
Single Cycle SC	C
Burst Firing BF	B
Soft Start + Burst Firing S+BF	J
Delayed Triggering + Burst Firing DT+BF	D
Phase Angle PA	P
Soft Start + Phase Angle S+PA	E

11 Control Mode

Description code	Numeric code
Open Loop	0
Voltage Feed Back V	U
Power Feed Back VxI	W
Current Feed Back I	I
External Feed Back	E

12 Option (3)

Description code	Numeric code
4:20mA Retransmission	A
0:10V Retransmission	V

13 Fan Voltage

Description code	Numeric code
Fan Voltage equal to Aux. Voltage	3

14 Approvals

Description code	Numeric code
CE EMC For European Market	0
cUL For American Market up to 500A included (Pending)	L (4)

15 Manual

Description code	Numeric code
None	0
Italian Manual	1
English Manual	2
German Manual	3
French Manual	4

16 Load type/Connection

Description code	Numeric code
Resistive Load/ Delta Connection	1
Resistive Load/ Star Connection	2
Resistive Load/ Star Connection + Neutral	7
Transformer Load/ Delta Connection	3
Transformer Load/ Star Connection	4
Transformer Load/Star Connection + Neutral	5
Resistive Load/ Open delta	6

Note (1): After 16th digit write current and voltage of load inside brackets Ex. (190A-400V). This is to receive the Thyristor unit already tuned from Honeywell.
Note (2): Rating not available at 690V.
Note (3): In total are available 4 Analog output. One dedicated to control mode and the other 3 for current on phases 1-2-3.
Note (4): cUL approval up to 500A included (Pending).

HPC UNIT

EVOLUTION IN POWER CONTROL

HPC UNIT was designed specifically to manage multizone systems. This powerful unit, with its unique algorithm, will minimize your energy costs by controlling sychronization and power limit.

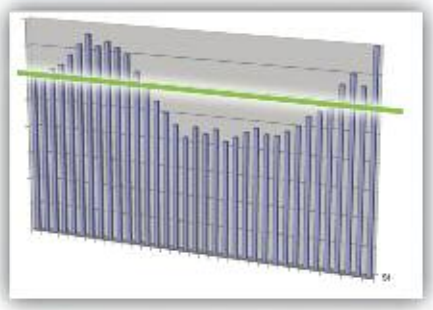
Benefits include:

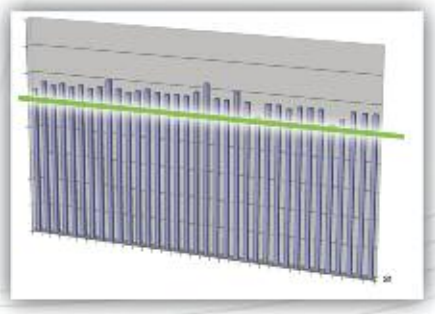
- Elimination of power overshoot (see graph below).
- Power factor close to one due to zero crossing firing.
- **HPC UNIT** keeps your instantaneous power within the limit of your electricity supply contract.
- Prevents increases in energy supply tariffs imposed by your electricity supplier.
- Quick return on your investment.

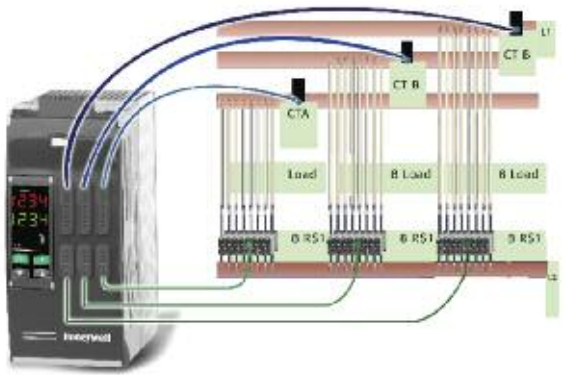
This powerful unit with high performance micro can drive simple thyristor unit like THYRISTOR HS with zero crossing firing. By using the PC, simple thyristor units can be used reducing the overall financial investment.

- Simultaneous fast full wave control of
  8-16-24 THYRISTOR HS-1PH single phase units
  8 THYRISTOR HS-2PH/3PH for 3 phase loads

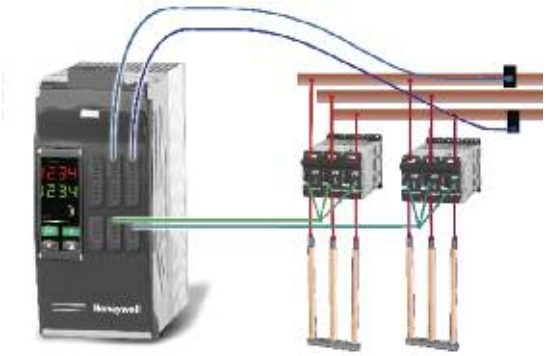
- Each loop's process information is managed independently.
  - Calculation of instant current and RMS Current and Power.
  - Calculation of load resistance with Heater Break Alarm.
  - Modbus Master, Modbus slave, Profilbus DP, Modbus/TCP.







APPLICATION WITH 8, 16 OR 24 SINGLE PHASE LOADS



APPLICATION WITH 8 THREE-PHASE LOADS

Easy to start HPC UNIT

Only few parameter are requested to start with THYRISTOR SOFTWARE:

- Set the operative current of the heater zone.
- Set the Total Power Limit.
- Set the Power of each zone.

The HCP UNIT strategy is easy to implement. Do the same operation with a competitor's load management system and the operator must learn up to 15 pages of the manual and understand up to five models of synchronization.

Synchronization

On all controlled zones, the Live Predictive Synchronization is automatic resulting in superior performance:

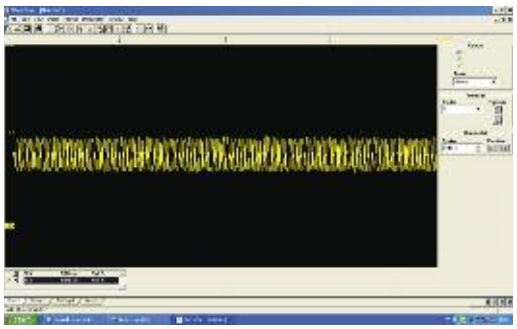
- Total current is equal to a sinusoidal wave form.
- Power factor > 0,9.
- Instantaneous current close to average value.
- Cancellation of harmonics.
- Power saving by harmonic reduction.
- Flickering effect removed.

Synchronization selection is available for normal resistive loads or short infrared.

Smart Power limitation

- Smart power limitation works together with synchronization. If this function is enabled, HPC UNIT makes a live calculation of power at each period and generates the output values for the next period.
- If the calculated power is below the power limit value, the previous values remain with each channel using full power.
- If the power is above the power limit value, the setpoint of each channel is reduced proportionally to restrict power overshoot. This function significantly reduces disturbances on the main network compared to a full power system, preventing any increase in energy tariffs imposed by the electricity supplier.
- This function can be activated/deactivated and the limit value changed at any time.

WITHOUT POWER CONTROL OPTIMISATION



WITH POWER CONTROL OPTIMISATION

	1	2	3	4	5		6	7	8	9	10	11	12	13	14	15	16
HPC UNIT	H	P	C	_	_	-	_	_	_	_	_	_	_	0	0		0

4,5 Channels

Description code	Numeric code
8 Channels (for 8 Off one phase unit)	0 8
16 Channels (for 16 Off one phase unit)	1 6
24 Channels (for 24 Off one phase unit)	2 4
8 Channels for 2-3PH	3 8

6 Current Sensor

Description code	Numeric code
50/0,05 A	1
100/0,05 A	2
150/0,005 A	3
200/0,05 A	4
250/0,05A	5
400/0,05A	6
80070,05A	7

7 Communication

Description code	Numeric code
Ethernet	1
ModBus Slave	2
ModBus Master	3
Profibus	4
Profinet	5

8 Primary Voltage Aux. Transformer

Description code	Numeric code
Transformer 24V	1
90:130V	2
170:265V	3
230:345v	4
300:530V	5
510:690V	6
600:760V	7

9 Firing

Description code	Numeric code
Half Cycle at 50% power demand	1
One Cycle at 50% power demandModBus	2

10 Feed Back

Description code	Numeric code
No feedback	1
Power	2

11 Approvals

Description code	Numeric code
CE EMC	1

12 Manuals

Description code	Numeric code
None	0
Italian Manual	1
English Manual	2
German Manual	3
French Manual	4

13 Version

Description code	Numeric code
Version 1	1

AUXILIARY UNITS

CD-RS

Compact and smart communication converter.
Input RS232. Output RS485 or 422.
RS232 connection via a 9 pin connector on front of unit.
RS485 or 422 via screw terminals.
This converter can be used to interface a computer with Honeywell communicating Thyristor Units.

Code: CD-RS

FIELD BUS MODULES

Code: TU-RS485-PDP used to convert RS485 Modbus to Profibus DP.
Code: TU-RS485-ETH used to convert RS485 Modbus to Ethernet.

CD KP-OPERATOR INTERFACE

The CD-KP is designed to be connected with Thyristor HE and Thyristor T via RS485 communications. The LED display will show Power, Voltage or Current values, all in engineering units. Any one of these variables can be selected and retransmitted via an isolated output (4-20mA or 0-10V). No need to open the cubicle door and stop the process, an RS485 connector on the front of the unit allows direct connection to a portable PC for easy configuration. In addition the display unit allows simple diagnostics of fault conditions.

HMI-KP OPERATOR INTERFACE

Honeywell Thyristor units. On front unit is possible to set or to read:
Load Current in RMS value and Load Voltage.
Power delivered to the load and Power demand.
Digital input 1&2 Status.
SC = Short circuit on Thyristor.
HB = Partial or total load failure.
Local/Remot, Up/Down.
Trend of the selected variable Ex.Current Voltage.
Up Load and Down Load Thyristor unit configuration.
Language selection.
Dimensions: 131x174x44 (HxWxD).

CD EASY

This is a memory support tool that can be used by maintenance personnel on the shop floor. The user can copy the configuration of one Thyristor unit and paste it into another. The CD-EASY is very simple, with one push button to upload the configuration (Read) and another to download the stored configuration (Write).
The CD-EASY can be used with Thyristor HE and Thyristor T unit.

Code: CD-EASY

INDICATORS

Honeywell have a range of indicators with or without RS485 communications and Modbus protocol

Honeywell Indicators - a 48x96mm indicator 3 1/2 digit
Honeywell Indicators - a 48x48mm indicator 4 digits with RS485 as option
Honeywell Indicators - a 48x96mm indicator 4 digits with RS485 as option

Fully configurable microprocessor based indicators that can be connected to our Thyristor units.

Code: CD1800 W6100 W8010

CONFIGURATION SOFTWARE

The thyristor unit leave the factory alredy configured but if is necessary to verify the configuration or to modify it is necessary to have the Configurator plus the Cable Kit.

Code: CCA cable + converter

There is one page very friendly named "Test Unit" from where without instruction is possible to communicate in intuitive mode.
Just clicking on what you need.
With CD-RS converter (see on left side) it's possible to communicate with the Thyristor unit without cable kit.

Code: HONEYWELL-CONFIGURATOR

CABLE KIT

The cable kit on left side is for universal use on Honeywell Thyristors.

The components of the Kit are:

- 2 USB cable.
- 1 USB/TTL converter.
- 1 adapter with 4 poles.
- 1 adapter with 9 pin connector.

Code: CCA

CURRENT TRANSFORMERS

Current Transformers has to be used when HB option has been selected
1 Off Current Transformer with current ≥ nominal current of Solid State Relay
3 Off Current Transformer with current ≥ nominal current of Solid State Relay

Current Transformer 38x48x20: 25/0,05 **Code:** C T 2 5
Current Transformer 38x48x20: 50/0,05 **Code:** C T 5 0
Current Transformer 38x48x20: 100/0,05 **Code:** C T 1 0

FAN

Fans with dimensions 92x92 mm and 120x120 mm are used with the units described above to increase their current rating.
The Standard voltage supply is 230V ac as an option is possible to have 110V.

Fan 92x92 110V **Code:** F92x92-110V
Fan 92x92 230V **Code:** F92x92-230V
Fan 120x120 110V **Code:** F120x120-110V
Fan 120x120 330V **Code:** F120x120-230V

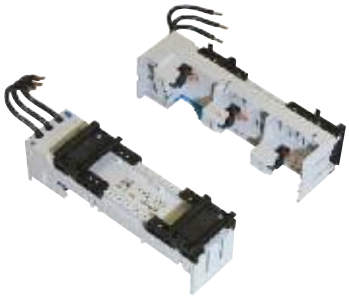
HONEYWELL THYRISTORS ARE A SYSTEM NOT JUST A PRODUCT

The innovative design of **THYRISTOR** Family has been done to satisfy system solutions and to do it has been considered following auxiliary units:

▪ COPPER BAR

This picture show how it is possible to mount **Thyristor** on copper bars with Length 12:30 mm and thickness 5:10 mm.

Lateral Support for 3 copper bars **Code:** SC3-30
Lateral Support for 4 copper bars **Code:** SC4-30



▪ BASE PLATE

Different type of base plate are available.
The Base Plate have 3 Off Screw terminals 16 mm.

Width:	Length:	Code:
54	200	BP-54-200
72	200	BP-72-200
54	260	BP-54-260

▪ CABINET

This is a cabinet under construction where is possible to see copper bars on all cabinet back panel.
The structure rapresented is the best possible solution to have system coordination for hight short circuit current.
In addition is not necessary to wire power cables from Automatic circuit breaker to each thyristor units.
The base plate are plug-in thus in case of fault it's possible to substitute a complete zone.

▪ CABINET

This is the cabinet at the end of the mounting and wiring of 60 off temperature controll zones.
The cabinet is very clean from mounting point of view.

BASE PLATE + ADAPTOR

How it's possible to see on original base plate, can be mounted an adaptor. Honeywell has many of this adaptor for its product.

ADAPTOR

This is an adaptor for **THYRISTOR** up to 210 A in different configuration like 1, 2 or 3 Phase Control.

COPPER COMB - 3PH

This is a copper comb for three phase connections.
This product is sold in pices of one meter.
To have IP20 is available a plastic protection that is supplied as standard with comb copper.
Pitch:36 Central connection:130A Side connection:80 A.

Code: Comb-3PH-36

COPPER COMB - 1PH

This is a comb done with copper to make a multiple connection of **THYRISTOR-1PH**.
This product is sold in pices of one meter.
To have IP20 is available a plastic protection that is supplied as standard with comb copper.
Pitch:36 Central connection:130A Side connection:80 A.

Code: Comb-1PH-36

SCREW TERMINAL

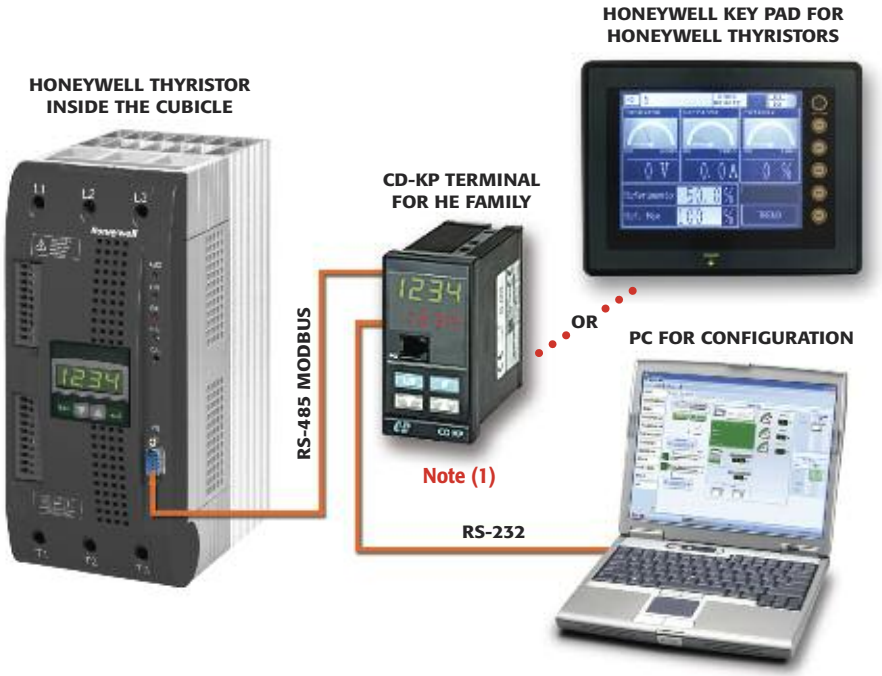
This is a screw terminal that can be mounted in each position of the copper comb above.

Code: ST16

PACKAGE

This is an example of package where there are 9 Unit.
One or more screw terminal can be allocated where we want.
From this terminal a traditional cable will be connected to circuit breaker directly.

HONEYWELL KEYPAD FOR THYRISTOR UNIT



Note (1): CD-KP Terminal can be used with THYRISTOR HE and THYRISTOR T only.

CD-KP is designed to give two access levels:

- First Access Level: the operator is able to view the power, current and voltage levels as well as set the power when the CD-KP is in Local Mode. At this level the password function is disabled.
- Second Access Level: By connecting a PC to the RS232 port, located on the front of the CD-KP, it is possible to access all parameters of the HONEYWELL Thyristor Unit using the free downloadable Configuration Software. Configuration changes can be made interactively, without powering down the unit, removing the need to open the cabinet or to stop the process.

General Description

- Local/Remote facility.
- Set point ramp up/down.
- Scroll selection of: Set point power; Power read out; Current; Voltage.
- Display indication for these parameters: Heater Break alarm SCR short circuit.
- Retransmission (4-20mA or 0-10V) of one parameter: power, current or voltage.
- Dimensions 48x96x92mm (WxHxD).

CLONE FACILITY USING CD-EASY

Note (2): CD EASY be used with THYRISTOR HE and THYRISTOR T only.

CD-EASY is a Memory Support Tool used by maintenance personnel on the shop floor.

The Clone Facility makes it possible to copy the configuration of one Thyristor Unit and paste it into another in a matter of seconds.

The CD-EASY can be loaded with the operating configuration of the standard unit and stored together with the system drawings in a convenient place, enabling unit reconfiguration within seconds if required.

Where adding expert to your staff is easy as point and click.

Our solution oriented web-site allows you to collect all information for your project without to getting up from your desk. On our web-site you will find:

- Automatic selection of Thyristor Unit starting from your application.
- Technical bulletin of selected product including features and dimensions.
- Maintenance manual with electrical wiring.
- Free software tool to configure Thyristor Unit.
- Click and download suggested recipe for your application using HONEYWELL knowhow.
- Product quotation request form.

We guarantee your satisfaction and we help you to save time.

THYRISTOR Family Configurator

- Easy to use with recipe facility. Each thyristor unit can be configured in a matter of seconds.
- Option to configure the firing mode on line without powering down the unit.
- Look for you application and download the configuration software.

Fuse for all markets CE & cUL (Pending)

Fuse for all markets CE & cUL (Pending)

Model Fuse & Fuseholder Selection TAB	THYRISTOR HS1-1PH THYRISTOR HM1-1PH THYRISTOR HCL	THYRISTOR HS2-2PH THYRISTOR HM2-2PH	THYRISTOR HS3-3PH THYRISTOR HM3-3PH	THYRISTOR HE2	THYRISTOR HE3	THYRISTOR T1	THYRISTOR T2	THYRISTOR T3
Current	Spare fuses	Spare fuses	Spare fuses	Spare fuses	Spare fuses	Spare fuses	Spare fuses	Spare fuses
30A	FU1451/40A	FU1451/40A	FU1451/40A					
35A	FU1451/50A	FU1451/50A	FU1451/50A	FU63FE	FU63FE		FU63FE	FU63FE
40A	FU1451/50A	FU1451/50A	FU1451/50A					
45A				FU80FE	FU80FE		FU80FE	FU80FE
60A	FU100FE	FU100FE	FU100FE					
75A				FU100FE	FU100FE		FU100FE	FU100FE
90A	(CL)FU200FE(1) FU100FEE(2)	FU100FE	FU100FE					
100A				FU160FEE	FU2x80FE		FU160FEE	FU160FEE
120A	FU200FEE	FU200FEE	FU200FEE					
125A				FU200FEE	FU2x100FE		FU200FEE	FU200FEE
150A	FU200FEE	FU200FEE	FU200FEE	FUURB250 FU200FEE	FU2x100FE		FUURB250 FU200FEE	FUURB250 FU200FEE
180A	FUURB315	FUURB315	FUURB315					
200A				FUURB315				
210A	FUURB315	FUURB315	FUURB315					
225A			FUURB315		FUURB315 2xFU160FEE		FUURB315 2xFEE160	FUURB315 2xFEE160
280A	2XFUURB250	2XFUURB250		FUURB315			FUURB315 2xFEE160	
300A			FU450FMM		FU450FMM			FU450FMM
350A			FU550FMM		FU550FMM			FU550FMM
400A	FU550FMM	FU550FMM	FU550FMM	FU550FMM	FU550FMM		FU550FMM	FU550FMM
450A		2xFU315FM	FU700FMM	2xFU315FM	FU700FMM		2xFU315FM	FU700FMM
500A	FU700FMM	2xFU315FM	FU700FMM	2xFU315FMM	FU700FMM		2xFU315FM	FU700FMM
600A	2xFU450FMM	2xFU450FMM		2xFU450FMM			2xFU450FMM	
700A	2xFU450FMM	2xFU450FMM		2xFU450FMM			2xFU450FMM	
850A						2xFMM550	2xFMM550	2xFMM550
1000A						SIBA 1000A/690 2068132-1000	SIBA 1000A/690 2068132-1000	SIBA 1000A/690 2068132-1000
1500A						SIBA 1500A/690 2068132-1500	SIBA 1500A/690 2068132-1500	SIBA 1500A/690 2068132-1500
2000A						2 x SIBA 1000A/690 2 x 2068132-1000	2 x SIBA 1000A/690 2 x 2068132-1000	2 x SIBA 1000A/690 2 x 2068132-1000
2700A						2 x SIBA 1500A/690 2 x 2068132-1500	2 x SIBA 1500A/690 2 x 2068132-1500	2 x SIBA 1500A/690 2 x 2068132-1500

(1) FU200FE it's used on THYRISTOR HCL only (2) FU100FEE it's used on: THYRISTOR HS1-1PH, THYRISTOR HM1-1PH

SALES AND SERVICE

For application assistance, current specifications, pricing, or name of the nearest Authorized Distributor, contact one of the offices below.

ASIA PACIFIC

Australia
Honeywell Limited
Phone: +(61) 7-3846 1255
Fax: +(61) 7-3840 6481
Toll Free: 1300-36-39-36
Toll Free Fax: 1300-36-04-70

China - PRC - Shanghai
Honeywell China Inc.
Phone: (86-21) 5257-4568
Fax: (86-21) 6237-2826

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Honeywell Pte Ltd.
Phone: +(65) 6580 3278
Fax: +(65) 6445-3033

South Korea
Honeywell Korea Co Ltd.
Phone: +(822) 799 6114
Fax: +(822) 792 9015

Email (TAC):
hfs-tac-support@honeywell.com

EMEA

Honeywell Process Solutions
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Fax: +44 (0) 1344 655554

Email (Sales):
sc-cp-apps-salespa62@honeywell.com

Email (TAC):
hfs-tac-support@honeywell.com

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Phone: 1-800-343-0228

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Email (TAC):
hfs-tac-support@honeywell.com

Specifications are subject to change without notice.

For More Information
To learn more about Honeywell's Thyristors, visit www.honeywellprocess.com or contact your Honeywell account manager.

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Process Solutions

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