

THYRISTORS HCL-1PH from 35A to 40A Specifications Phase Angle and Delay Triggering

55-77-03-39, March 2012



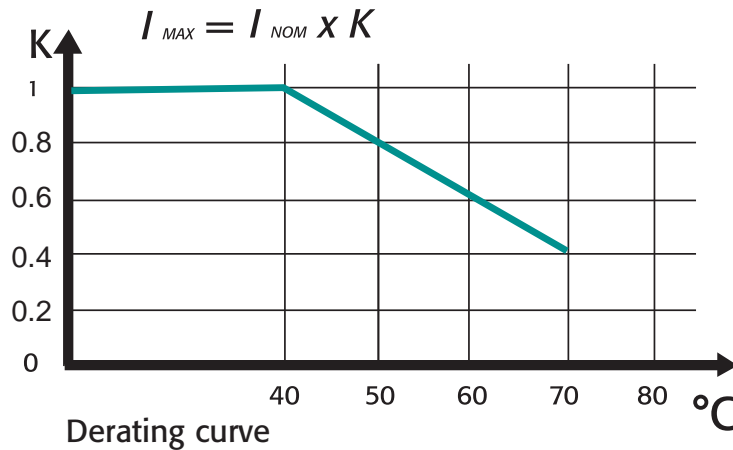
GENERAL DESCRIPTION

- THYRISTORS HCL-1PH has been specifically designed to be an Universal Unit.
- RS485 Comm. MODBUS Protocol Standard.
- Frontal Key Pad to configure the unit and to read V, I and Power.
- Configurability via RS485, USB Port and frontal Key Pad.
- Microprocessor based electronic circuit fully isolated from power.
- Universal input signal: RS485, Pot, Analog and SSR.
- Soft Start + Phase Angle and Delayed Triggering Firing.
- Configurable Control Mode: V, I, V2 and Vxl.
- Current Limit Std adjustable from front unit.
- Profiling current limit via analog input.
- Heater Break alarm to diagnose partial or total load failure and Thyristor Short circuit.
- Digital input configurable.
- Fuse and Fuse Holder Standard.
- Current transformer integrated in Fuse Holder.
- Comply with EMC, cUL pending.
- IP20 Protection.
- DIN RAIL mounting.



TECHNICAL SPECIFICATION

Voltage power supply	From 24V to 480V Max (Std) or 600V on request.		
Voltage Frequency	50 or 60 Hz no setting needed from 47 to 70 Hz.		
Nominal Current	35A, 40A.		
Input Signal	Voltage input	0:10Vdc	impedance 15 K ohm;
	Current input	0:20/4:20mA	impedance 100 Ohm;
Digital input	4:30V dc 5 mA Max (On > 4Vdc Off < 1Vdc)		
Firing	Soft Start + Phase Angle, Delay Triggering + Burst Firing.		
Control Mode	Voltage, Current, Square Voltage and Power selectable via frontal Key Pad, and RS485 or via Digital input to transfer from one control mode to another one to establish a control strategy.		
Auxiliary Voltage Supply	90:130Vac	8VA Max	
	170:265Vac	8VA Max	(Standard)
	230:345Vac	8VA Max	
	300:530Vac	8VA Max	(Standard)
	510:690Vac	8VA Max	
Heater Break Alarm	HB alarm setting on front unit or RS485 with possibility to set sensitivity. Relay output 0,5A at 110V.		
Mounting	DIN RAIL Mounting or Panel Mounting.		
Operating Temperature	40 °C without derating. Over this temperature see below derating curve.		
Storage temperature	-25 °C to 70 °C Max.		
Altitude	Over 1000 m of altitude reduce the nominal current of 2% for each 100m.		
Humidity	From 5 to 95% without condense and ice.		



HEATER BREAK ALARM HB

ON FRONT CABINET



The Heater Break circuit diagnostic partial or total load failure. It reads load resistance with an internal voltage transducer and current transformer to calculate the resistance value V/I .

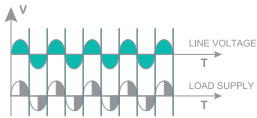
The Heater Break circuit is compensated for voltage fluctuation, in fact a voltage variation has no influence on resistance value because V/I ratio remain constant.

On this unit is possible to set the nominal resistance value and the alarm sensitivity.

HB alarm in addition diagnostic the thyristor in short circuit.

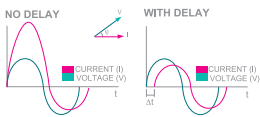
A normally open contact gives the alarm condition and an indication of the alarm type appears on display.

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.

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.

FIELD BUS MODULE



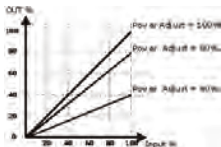
CD-RS Used to convert RS232 to RS422.

TU-RS485-PDP Used to convert RS485 Modbus to Profibus DP.

TU-RS485-ETH Used to convert RS485 Modbus to Ethernet.

For more informations see "Field Bus Module".

POWER SCALING



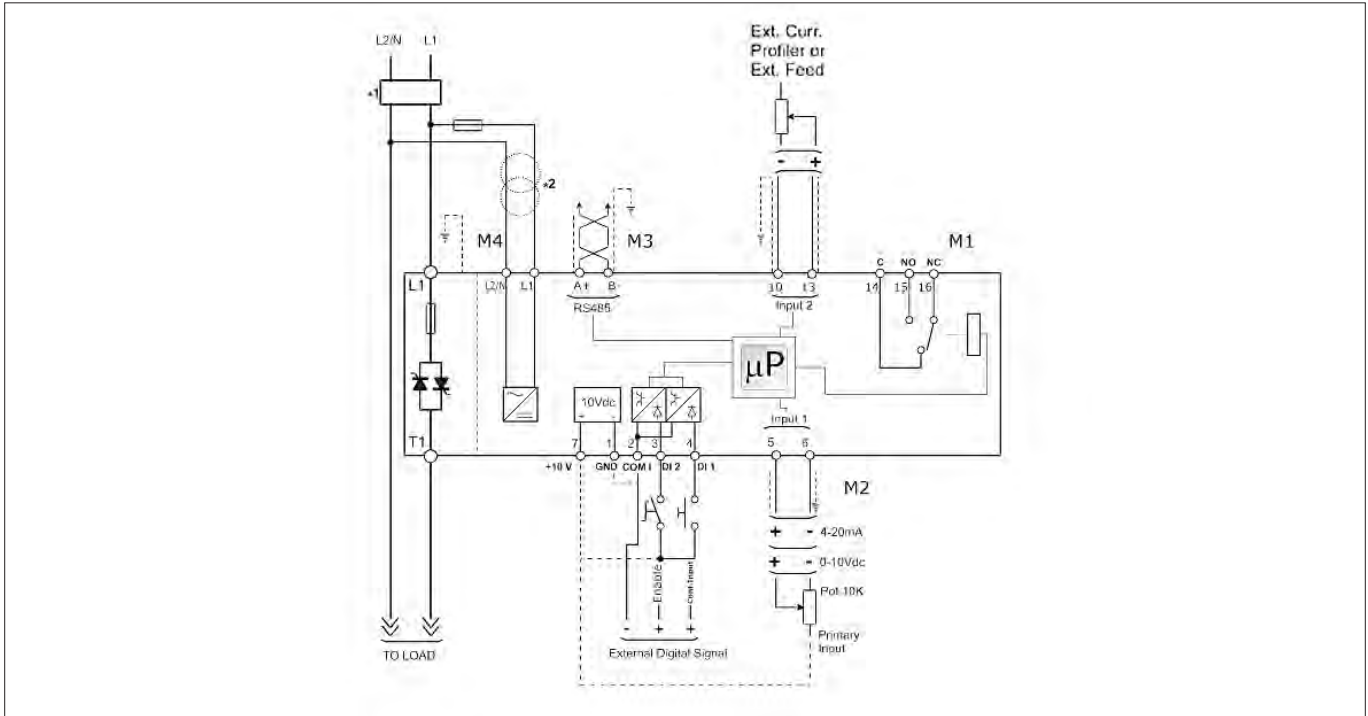
It's a scaling factor of the input command signal and limit the output of Thyristor unit. This parameter can be adjusted from 1 to 99% via RS485 or by the front of the unit. If this parameter is set at 50% and the input signal is 100% the output become 50%. This feature is very useful to reduce the power when a zone has been oversized or when a temperature controller gives same reference to more unit along a furnace.

Imagine 3 zones with left and right one close to the door where in a continuous furnace the material come into and flow out. The profile of temperature along furnace is higher in central zone because there is less dispersion but if we scale its input we can have a flat profile.

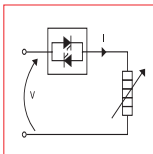
APPLICATIONS AND FOCUS ON:

- Infrared lamp
- Furnaces
- Petrochemical
- Dryers
- Pharmaceutical
- Autoclaves
- Chemical
- Extrusion line.
- Climatic chambers

WIRING CONNECTION THYRISTORS HCL-1PH 35A to 40A

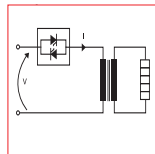


LOAD TYPE



Silicon carbide elements
Molibdenum,
Tungsten,
kanthalSuper, Platinum
Infrared Lamps

LOAD TYPE

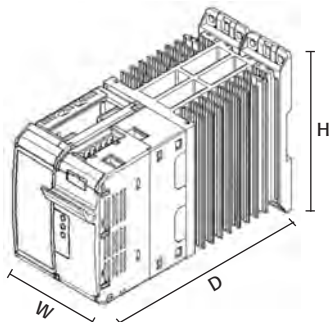


Transformers coupled
with normal resistance
(use DT Firing
Mode)
Transformers coupled
with cold resistances
kanthalSuper (use
Phase Angle + Current
Limit)

NOTE

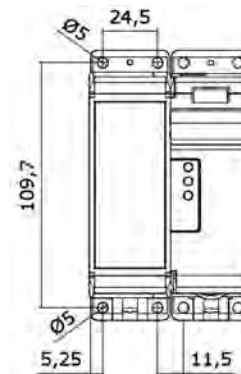
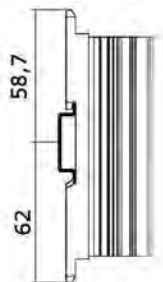
- (1) The user installation must be protecting by electromagnetic circuit breaker or by fuse isolator. The semiconductor I^2t should be 20% less than power controller I^2t . Semiconductor fuses are classified for UL as supplementer protection for semiconductor. They are note approved for branch circuit protection.
- (2) The auxiliary voltage supply of the Revo unit must be synchronized with load voltage supply. If the Auxiliary Voltage (written on the identification label) is different from Supply Voltage (to the load), use an external transformer connected as above.

DIMENSION AND FIXING HOLES



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

THYRISTORS HCL-1PH 35A - 40A



OUTPUT FEATURES (POWER DEVICE)

Nominal current in continuous service:	35A, 40A
Max peak current (10ms)	600A for unit type 035 800A for unit type 040
Voltage range:	24÷600V
Repetitive peak reverse voltage:	1200V (480V), 1600V (600V)
Latching current:	250mA
Leakage current:	15mA eff
I _t value tp=10msec:	1750A ² /S for unit type 035 3110A ² /S for unit type 040
Frequency range:	47÷70Hz
Power loss (I=I _{nom}):	44W for unit type 035 50W for unit type 040
Isolation Voltage:	2500Vac

ORDERING CODES

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
THYRISTORS HCL-1PH	H	C	L	-	-	-	-	-	-	-	-	-	-	-	-	-
4, 5, 6 Current	Description code		Numeric code		8 Aux. Voltage supply		Description code		Numeric code		11 Control Mode		Description code		Numeric code	
	35A		0 3 5		90:130V (4)		1				Open Loop		0		14 Approvals	
	40A		0 4 0		170:265V (4)		2				Voltage Feed Back V		U		CE EMC For European Market	
					230:345V (4)		3				Power Feed Back Vxl		W		cUL For American Market, Pending	
7 Max Voltage	Description code		Numeric code		300:530V (4)		5				Voltage Square f/b V ²		Q		L	
	480V		4		510:690V (4)		6				Current Feed Back I		I			
	600V		6												15 Manual	
					9 Input		Description code		Numeric code		12 Fuse & Option		Description code		Numeric code	
					SSR		S				Fuse + Fuse Holder +CT		Y		None	
					0:10V dc		V				Fuse + Fuse Holder +CT +HB		H		Italian Manual	
					4:20mA		A								English Manual	
					10KPot		K								German Manual	
					RS485		R								French Manual	
					10 Firing		Description code		Numeric code		13 Fan Voltage		Description code		Numeric code	
					Delayed Triggering + Burst Firing DT+BF		D				No Fan		0		16 Version	
					Phase Angle PA		P								Std version with one fuse+ Fuse Holder	
					Soft Start + Phase Angle S+PA		E								Second fuse used with Phase to Phase voltage Supply for unit (1)	
															Second fuse + additional safety relay (2)	
															3	

LEGEND

CT = Current Transformer
HB = Heater Break Alarm

Note (1): If you need one THYRISTOR HCL-1PH with 2 Fuse & Fuse Holder
For dimensions see THYRISTOR HM2-2PH.

Note (2): If you need one THYRISTOR HCL-1PH with 2 Fuse & Fuse Holder + safety relay
For dimensions see THYRISTOR HM2-2PH.

Note (3): After 16th digit write current and voltage of load inside brackets Ex. (40A-400V)

Note (4): Load voltage must be included in Selected Auxiliary Voltage Range.

SALES AND SERVICE

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

ASIA PACIFIC	EMEA	NORTH AMERICA	SOUTH AMERICA
<p>(TAC) hfs-tac-support@honeywell.com</p> <p>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</p> <p>China - PRC - Shanghai Honeywell China Inc. Phone: (86-21) 5257-4568 Fax: (86-21) 6237-2826</p> <p>Singapore Honeywell Pte Ltd. Phone: +(65) 6580 3278 Fax: +(65) 6445-3033</p> <p>South Korea Honeywell Korea Co Ltd. Phone: +(822) 799 6114 Fax: +(822) 792 9015</p>	<p>Honeywell Process Solutions Phone: + 80012026455 or +44 (0)1202645583 Fax: +44 (0) 1344 655554</p> <p>Email: (Sales) sc-cp-apps-salespa62@honeywell.com or (TAC) hfs-tac-support@honeywell.com</p>	<p>Honeywell Process Solutions Phone: 1-800-423-9883 or 1-800-343-0228</p> <p>Email: (Sales) ask-ssc@honeywell.com or (TAC) hfs-tac support@honeywell.com</p>	<p>Honeywell do Brasil & Cia Phone: +(55-11) 7266-1900 Fax: +(55-11) 7266-1905</p> <p>Email: (Sales) ask-ssc@honeywell.com or (TAC) hfs-tac-support@honeywell.com</p>

Specifications are subject to change without notice.

For More Information

Learn more about how Honeywell's

THYRISTORS HCL-1PH

and how it can help improve
plant performance.

Visit our website

www.honeywellprocess.com/

or contact your Honeywell account manager.

Honeywell Process Solutions

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www.honeywellprocess.com/

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