

# Relay S-2PH from 280A to 700A

## Power Controller

### General Description

- Relay S has been specifically designed to save space and labour
- These simple units can be connected with Relay PC to manage multizone system this minimize your energy cost by controlling synchronization and power limit on each zone
- All circuit board, fuses and Thyristor can be inspected just opening front door
- Input signal: SSR, Analog as an option
- Zero Crossing, Burst Firing available at 4, 8 or 16 Cycles at 50% of Power demand
- Electronic fully isolated from power with constant current drain on input.
- Heater Break alarm option to diagnose partial or total load failure and Thyristor Short circuit
- Internal fixed fuses are standard
- Current transformer integrated (with Heather Break option)
- Special design for Heat sink with very high dissipation value
- CE, cUL
- Panel Mounting
- IP20 Protection



### Technical Specification

<b>Voltage power supply</b>	24V minimum up to 480V, 600V On request		
<b>Voltage Frequency</b>	50 or 60 Hz no setting needed from 47 to 70 Hz		
<b>Nominal Current</b>	280A, 400A, 450A, 500A, 600A, 700A		
<b>Input Signal</b>	SSR	4:30Vdc	5mA Max (On ≥ 4Vdc Off ≤ 1Vdc);
	Voltage input	0:10Vd	impedance 15 K ohm;
	Current input	0:20/4:20mA	impedance 100 Ohm;
<b>Firing</b>	Zero Crossing, Burst Firing with analog input signal only		
<b>Auxiliary Voltage Supply</b>	90:130Vac 8VA Max   170:265Vac 8VA Max (Standard)   230:345Vac 8VA Max 300:530Vac 8VA Max (Standard)   510:690Vac 8VA Max		
<b>Heather Break Alarm</b>	Microprocessor based with automatic setting Digital Input, Relay Output 0,5A at 110V		
<b>Mounting</b>	Panel Mounting		
<b>Operating Temperature</b>	40 °C without derating. Over this temperature see below derating curve		
<b>Storage temperature</b>	-25 °C to 70 °C Max		
<b>Altitude</b>	Over 1000 m of altitude reduce the nominal current of 2% for each 100m		
<b>Humidity</b>	From 5 to 95% without condense and ice		

# Option's features and special details

## Heater Break Alarm (HB)

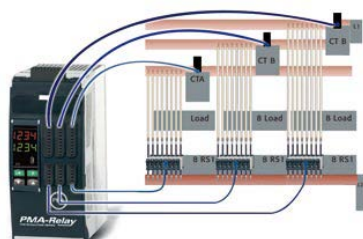
### ON FRONT CABINET



### FEW SECOND TO SET AND CALIBRATE THE UNITS

- Microprocessor based circuit
- Capacity to diagnose the failure of one Resistance over five in parallel
- Load failure alarm with LED indication on front unit
- Thyristor short circuit alarm with LED indication on front unit
- Alarm output with free voltage relay contact
- Alarm reset function and possibility to auto reset if the alarm disappear
- Built in Current transformer when heather Break option has been selected
- Self Setting via external command or push button on front unit
- Commom setting command can be given to many units and in a matter of second, the tuning is done, also by a non expert operator

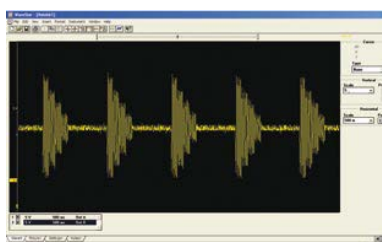
## How to add power load management and features to your simple units



### Use Relay-PC and you can add these Features

- Communication with different field bus
- Reading of current Voltage and Power
- Istantaneous power very close to average value, no pick power
- Power factor close to one no harmonics
- Prevents increase in energy supply tariffs imposed by your electricity supplier

### APPLICATION WITH 8, 16 OR 24 SINGLE PHASE LOADS

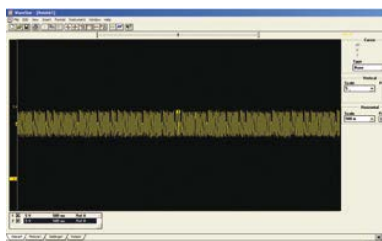


### WITHOUT POWER CONTROL OPTIMISATION

### Synchronization

On all controlled zones, Relay-PC 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.
- Flickering effect removed.



### WITH POWER CONTROL OPTIMISATION

### Smart power limitation

- Smart power limitation works together with synchronization. If this function is enabled, Relay-PC 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.

## Ordering Code Relay-PC

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Relay-PC	R	P	C	-	-	-	-	-	0	0	0	0	0	0	0	0

4,5 - Channels	
Description code	Numeric code
8 Channels	08
16 Channels	16
24 Channels	24

6 - Current Sensor	
Description code	Numeric code
N. 1 CS 200 Amps	1
N. 2 CS 200 Amps	2
N. 3 CS 200 Amps	3
N. 1 CS 400 Amps	4
N. 2 CS 400 Amps	5
N. 3 CS 400 Amps	6
N. 1 CS 600 Amps	7
N. 2 CS 600 Amps	8
N. 3 CS 600 Amps	9

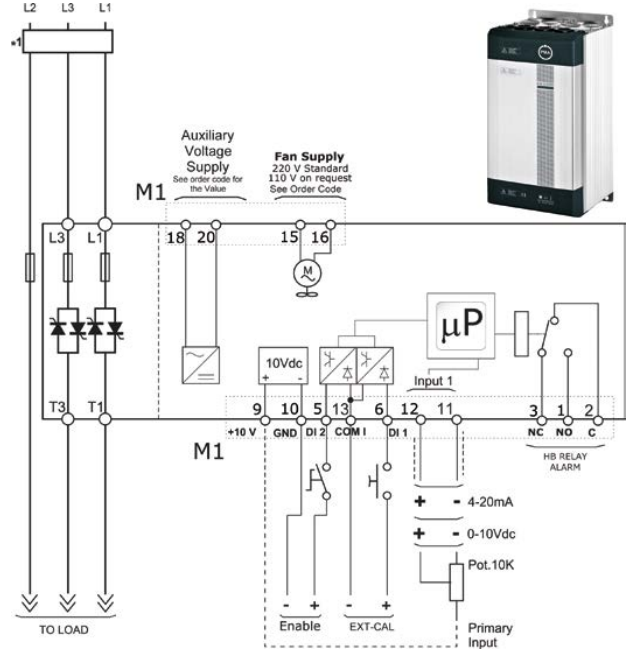
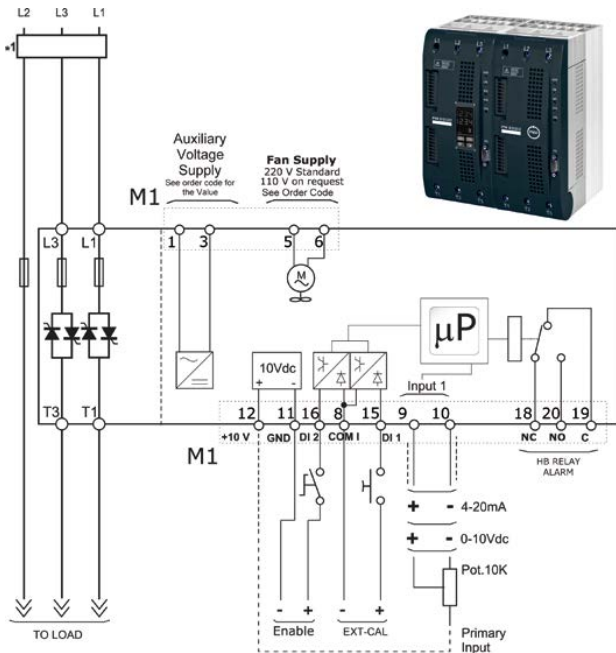
7 - Communication	
Description code	Numeric code
Ethernet	1
ModBus Slave	2
ModBus Master	3
Profibus	4
Profinet	5
CANopen	6
EtherCAT	7

8 - Transformer	
Description code	Numeric code
Transformer 24V	1

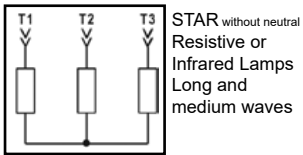
# Applications

- Autoclaves
- Furnaces
- Dryers
- Chemical

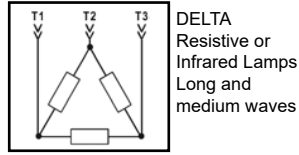
## Wiring connection Relay S 2PH from 280 to 700A



### LOAD TYPE



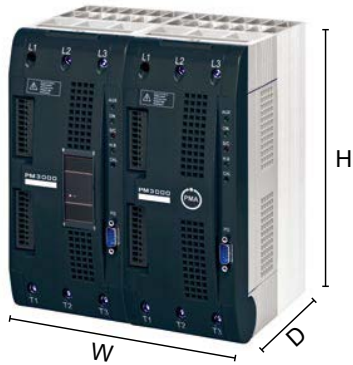
### LOAD TYPE



### Notes

- A suitable device must ensure that the unit can be electrically isolated from the supply, this allows the qualified people to work in safety.  
- The user installation must be protecting by electromagnetic circuit breaker or by fuse isolator. The semiconductor fuse are classified for UL as supplementer protection for semiconductor.
- The heat-sink must be connected to the earth.
- Only for the HB option

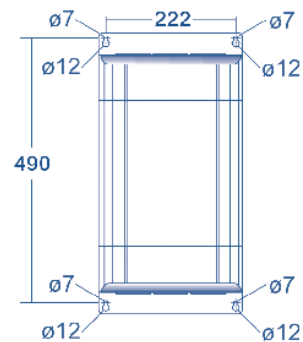
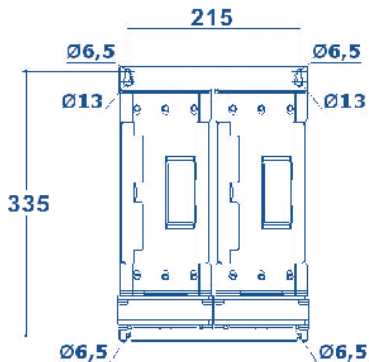
## Dimensions and fixing holes



S10 W 240 mm. - H 350 mm. - D 230 mm. - kg. 11 280A



S14 W 262 mm. - H 520 mm. - D 270 mm. - kg. 22,5 400A+700A



## Output Features (power device)

Current A	Voltage range (V)	Ripetitive peak reverse voltage (480V) (600V)		Latching current (mAeff)	Max peak one cycle (10msec.)	Leakage current (mAeff)	I2T value for fusing tp=10msec.	Frequency range (Hz)	Power loss I=Inom (W)	Isolation Voltage Vac
280A	24+600V	1200	1600	300	4800	15	108000	47+70	623	2500
400A	24+600V	1200	1600	200	7800	15	300000	47+70	875	2500
450A	24+600V	1200	1600	200	7800	15	300000	47+70	1021	2500
500A	24+600V	1200	1600	200	8000	15	306000	47+70	1061	2500
600A	24+600V	1200	1600	1000	17800	15	1027000	47+70	1178	2500
700A	24+600V	1200	1600	1000	17800	15	1027000	47+70	1425	2500

## Fan Specification

Supply: 230V Standard

Input Power 17W

Supply: 115V Option

Input Power 14W

## Ordering Code Relay S

<p><b>Max. Load Current Rating</b></p> <table border="0"> <tr><td>030</td><td>30A</td><td>210</td><td>210A</td></tr> <tr><td>035</td><td>35A</td><td>300</td><td>300A</td></tr> <tr><td>040</td><td>40A</td><td>350</td><td>350A</td></tr> <tr><td>060</td><td>60A</td><td>400</td><td>400A</td></tr> <tr><td>075</td><td>75A</td><td>450</td><td>450A</td></tr> <tr><td>090</td><td>90A</td><td>500</td><td>500A</td></tr> <tr><td>120</td><td>120A</td><td>600</td><td>600A</td></tr> <tr><td>150</td><td>150A</td><td>700</td><td>700A</td></tr> <tr><td>180</td><td>180A</td><td>800</td><td>800A</td></tr> </table>	030	30A	210	210A	035	35A	300	300A	040	40A	350	350A	060	60A	400	400A	075	75A	450	450A	090	90A	500	500A	120	120A	600	600A	150	150A	700	700A	180	180A	800	800A	<p><b>Aux. Voltage Supply</b></p> <p>0 No Aux. Voltage, without HB and/or without Analog Input up to 210A</p> <p>4 12:24V ac-dc 70mA, with HB and/or Analogue Input</p> <p>1 90:135V &gt; 210A <sup>(1)</sup></p> <p>2 180:265V &gt; 210A <sup>(1)</sup></p> <p>3 238:330V &gt; 210A <sup>(1)</sup></p> <p>5 342:528V &gt; 210A <sup>(1)</sup></p> <p>6 40:759V (600V) &gt; 210A <sup>(1)</sup></p> <p>7 540:759V (690V) &gt; 210A <sup>(1)</sup></p>	<p><b>Fan Voltage</b></p> <p>0 For 1 phase: No fan &lt; 90A For 2 phase and 3 phase: No fan &lt; 60A</p> <p>1 For 1 phase: Fan 110V (≥ 90A) For 2 phase and 3 phase: Fan 110V (≥ 60A)</p> <p>2 For 1 phase: Fan 220V (≥ 90A) Std. Version For 2 phase and 3 phase: Fan 220V (≥ 60A) Std. version</p>
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<p><b>Model</b></p> <p>1 1 phase</p> <p>2 2 phase</p> <p>3 3 phase</p>	<p><b>Max. Load Voltage</b></p> <p>4 480V</p> <p>6 600V</p> <p>7 690V</p>	<p><b>Input</b></p> <p>S SSR</p> <p>V 0:10V dc <sup>(2)</sup></p> <p>A 4:20 mA <sup>(2)</sup></p>																																				
		<p><b>Firing</b></p> <p>Z Zero crossing</p> <p>4 Burst firing 4 cycles <sup>(3)</sup></p> <p>8 Burst firing 8 cycles <sup>(3)</sup></p> <p>6 Burst firing 16 cycles <sup>(3)</sup></p>																																				
		<p><b>Manual</b></p> <p>0 No manual</p> <p>1 Italian</p> <p>2 English</p> <p>3 German</p> <p>4 French</p>																																				
		<p><b>Approvals</b></p> <p>0 CE</p> <p>L cUL + CE</p>																																				
		<p><b>Fuse &amp; Option</b></p> <p>0 No fuse <sup>(2)</sup></p> <p>F Fuse and fuse holder up to 40A. From 60A fixed fuses</p> <p>H Fuse and fuse holder (up to 40A) / fixed fuses (from 60A) + current transmitter + heater break</p> <p>X Fuse and fuse holder + current transmitter + heater break + flat wiring up to 40A <sup>(4)</sup></p>																																				

(1) Load voltage must be included in Selected Voltage Auxiliary Range for units > 210A

(2) With analogue input (0:10Vdc, 4:20mA) it is necessary to have the fuse (1 phase also the fuse holder on units =< 40 A)

(3) On at 50% power demand; Available only with analogue input

(4) Available up to 40A. With flat wiring it is necessary to use TU-RS1 (2;3) terminal unit

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