

# PT3000S-1PH

up to 110A



## CAUTION



Thyristor units are used in power industrial equipment. When the thyristor unit is working there are on the unit the following voltages.

- Maximum main supply voltage on power terminals up to 600 V.
- Fan voltage supply is 230 VAC 50/60Hz Power consumption 14W.

Don't remove the plastic cover which provides adequate protection against electric shock.  
Don't use this thyristor units in aerospace and nuclear application.

### Electric Shock Hazard

When thyristor unit has been connected to main supply voltage and is switched off, before to touch it be secure that the unit is isolated and wait at least one minute to permit to discharge internal capacitors. Thus be secure that:

- access to thyristor unit is only permitted to specialised personnel;
- the authorised personnel must read this manual before to have access to the unit;
- the access to the units must be denied to unauthorised personnel.

### Important warnings

- Local regulations regarding electrical installation should be rigidly observed.
- Safety regulations must be rigidly observed.
- Don't bend components to maintain insulation distances.
- Protect the units from high temperature humidity and vibrations.
- Don't touch components to prevent electrostatic discharges on them.
- Verify that all rating are in line with real needs.
- If authorised personnel must measure voltage current etc. on units, take away rings and other jewels from fingers and hands.
- Authorised personnel working on thyristor unit under power supply voltage must work on insulated board. Be secure that board is not connected to earth.

This listing does not represent a complete enumeration of all necessary safety cautions.

### Protection

PT3000 thyristor unit has a polymeric plastic cover to compliance to International specification IP20. To understand if IP20 protection is sufficient should be evaluated the installation place.

Open Type Equipment.

Maximum surrounding air temperature 40°C.

### Earth

PT3000 series has isolated heatsink. For safety connect the heatsink to earth to avoid shocks in case that circuit board or thyristors lost insulation. Earth impedance should be correspondent to local earth regulation. Periodically the earth efficiency should be inspected.

### Electromagnetic compatibility

Our thyristor unit have an excellent immunity to electromagnetic interferences if all suggestions contained in this manual are respected.

### Emissions

All thyristor switching at high speed generate some radiofrequency disturbance. PT3000 series compliance with EMC rules for CE mark. In many installations near electronic devices has not been noted problems. If radiofrequency devices at low frequency are used near the thyristor unit some precautions should be taken like line filters and shielded cables for input signal and for load cables.

## INSTALLATION AND WIRING INFORMATION

Before to install the PT3000S unit examine for damages or deficiencies. If any is found, notify the carrier immediately. Check that the product features shown on PT3000S cover corresponds to that ordered.

Before to switch on the unit verify:

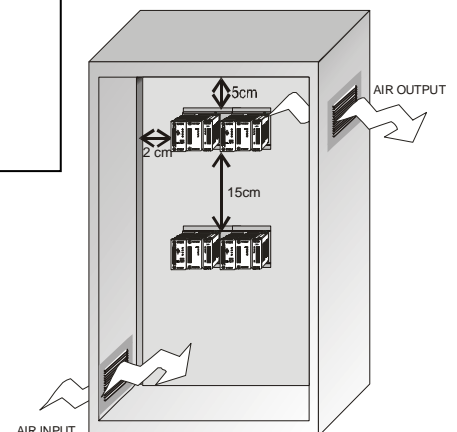
- Load current equal or less than nominal
- Main voltage equal or less than nominal
- Remember to supply fan at 230V on 110A unit

## INSTALLATION

PT3000S unit should be always mounted in vertical position to improve air cooling on heatsink. Maintain minimum distances in vertical and in horizontal as below represented. Don't install in proximity of hot elements and near units generating electromagnetic interferences.

When more units are mounted inside a cubicle provide air circulation as below represented.

Sometimes it is necessary to provide a fan to have better air circulation.



**TECHNICAL SPECIFICATIONS**

GENERAL FEATURES	
Stocking temperature:	from -40 to +100 °C
Operating Temperature:	from -30 to +40°C for higher temp. consult derating graph
Load isolation	2500Veff
Cover and Socket material	PolymericV2
Heat sink	Anodized aluminium
Delay switch ON time :	0.5 period max
Delay switch OFF time:	0.5 period max
Fan voltage:	230Vac ±15%
INPUT FEATURE	
<b>Logic input SSR</b>	4 - 30Vdc (ON ≥ 4Vdc OFF < 1Vdc)
Current drain	12mA
<b>Logic input SSR Low current</b>	5 - 30Vdc (ON ≥ 5Vdc OFF = 1Vdc)
Current drain	5mA
<b>Analogic Input Loop powered (Option)</b>	4-20mA (Is required 6,5Vdc minimum)
<b>A.C. Input(option)</b>	110÷240Vac ±15% 20mA

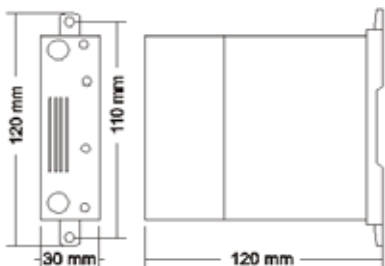
Size (A)	Voltage range (V)	Ripetitive peak reverse voltage		Latching current (mAeff)	Max peak one cycle (10ms) (A)	Leakage current (mAeff)	I <sup>2</sup> T value for fusing tp=10m sec	Frequency range (Hz)	Power loss I=Inom (W)	Isolation Voltage Vac
		480V	600V							
15A	24÷480	1200	NA	150	230	15	610	47÷70	18	2500
25A	24÷480	1200	NA	150	230	15	610	47÷70	30	2500
35A	24÷600	1200	1600	250	400	15	780	47÷70	42	2500
45A	24÷600	1200	1600	250	600	15	1800	47÷70	54	2500
60A	24÷600	1200	1600	450	1000	15	4750	47÷70	72	2500
90A	24÷600	1200	1600	450	2000	15	19100	47÷70	108	2500
110A	24÷600	1200	1600	450	1540	15	11300	47÷70	137	2500

ORDER CODE

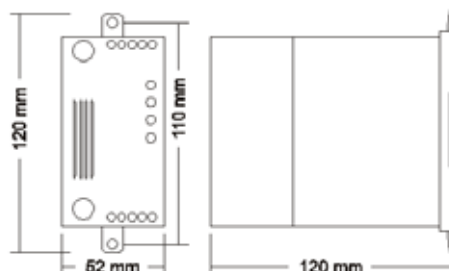
PT3000S 1PH/ [ ] / [ ] / [ ] / [ ] / [ ] / [ ] / [ ]

<b>CURRENT</b> • 2x10A • 15A • 25A • 35A • 45A • 60A • 90A • 110A	<b>OPER. VOLTAGE</b> • 240V • 480V • 600V	<b>MAX VOLTAGE</b> • 240V • 480V • 600V	<b>AUX. VOLTAGE</b> • 230V • 460V	<b>INPUT</b> • SSR • 110Vac • 230Vac • LP4-20mA (loop powered)	<b>FIRING</b> • ZC • BF (only with input LP4-20mA)	<b>OPTIONS</b> • EF (ext. fuses) • NF (int. fuses) • HB • UL (cert.) • FAN 110V
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S0 - PT3000 15-25A

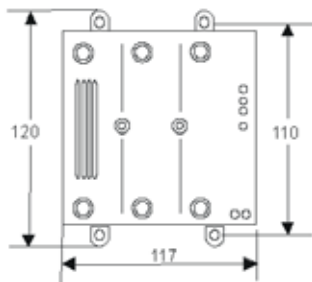


S3 - PT3000 35-45A

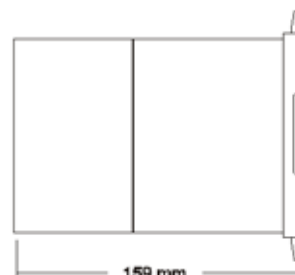
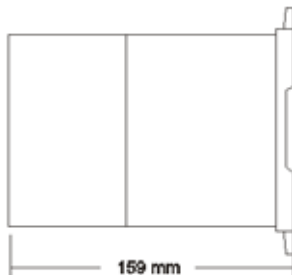
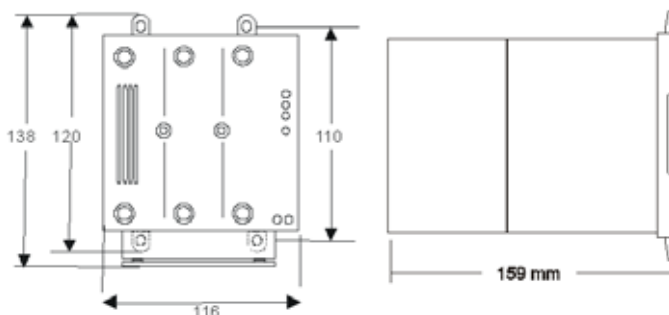


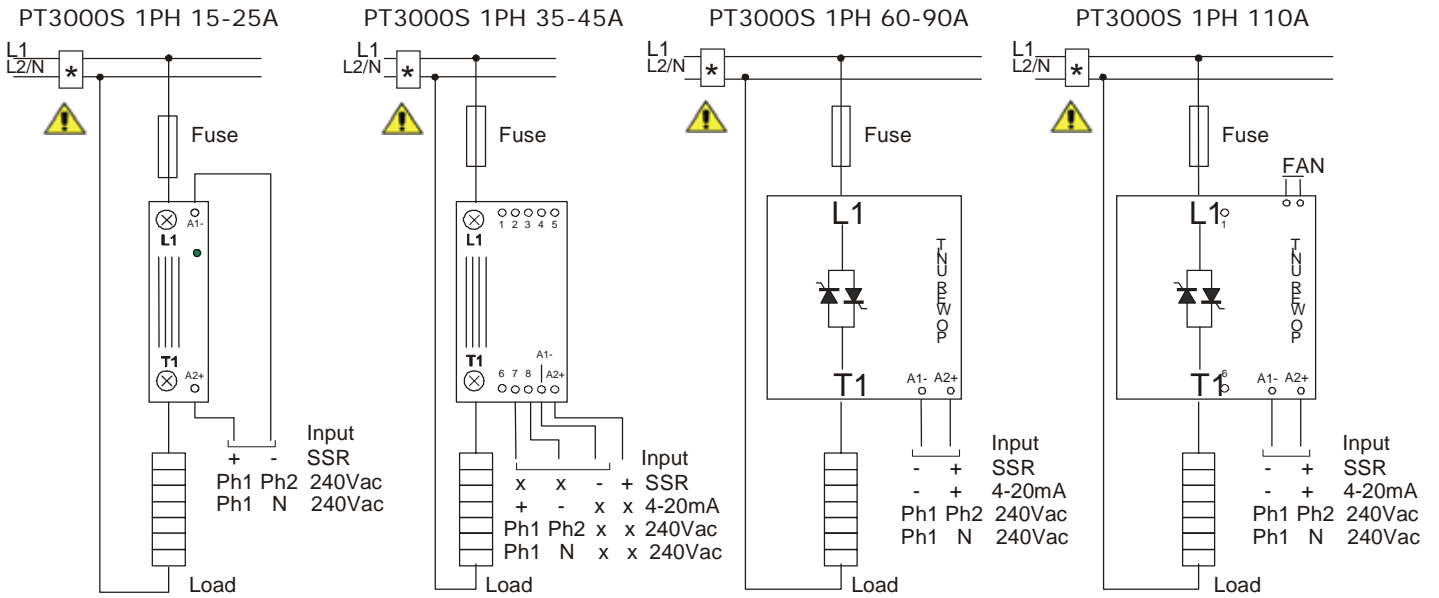
Size S0 e S1 DIN rail mounting or panel mounting with 4mm screw.  
Size S4 e S5 panel mounting with 4mm screw.

S7 - PT3000 60-90A



S8 - PT3000 110A





**INPUT TERMINALS**

Term	4-20mA	SSR	Vac
7	-	x	Phase1
8	+	x	Phase2 or Neutral
A1-	x	-	x
A2+	x	+	x

**POWER TERMINALS**

Term	Description
L1	Line Input
T1	Line Output

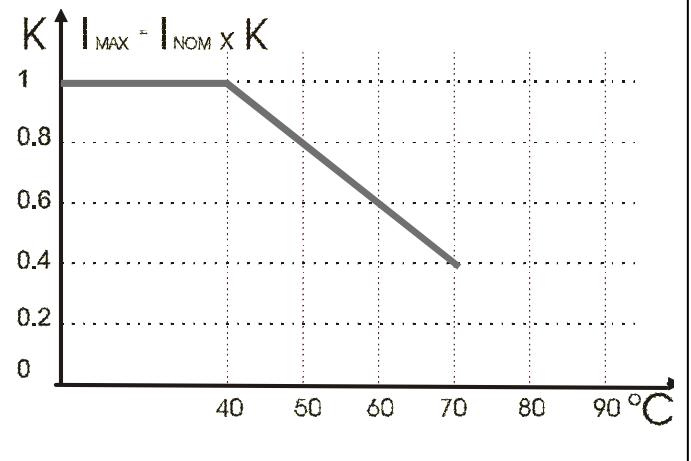
\* The user installation must be protected by electromagnetic circuit breaker or by fuse isolator

**WIRING INSTRUCTIONS**

PT3000 series has isolated heat sink. For safety connect the heatsink to earth using its terminal with earth symbol. PT3000 series can be susceptible to airborne interferences from near equipment or from interferences on main supply, so a number of precautions must be taken.

- Contactors coils and chokes must have in parallel a RC filter and must be supplied with a different voltage line.
- All input/output signal must use screened bifilar wires.
- Signal input and output must not lay in the same cable try

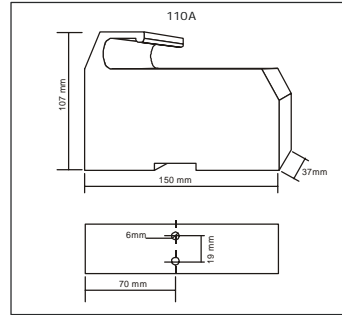
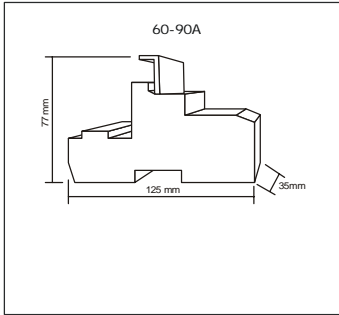
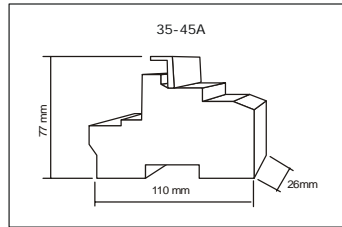
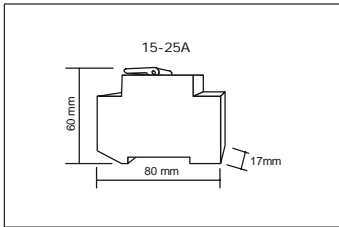
**DERATING GRAPH**



Use 75°C copper (CU) conductor only, provided with the terminal type indicated below.  
(Utiliser conducteur de cuivre (CU) pour 75°C seulement, avec les terminal suivants )

Current	Supply			Load		
	Cable		Screw	Cable		Screw
	mm <sup>2</sup>	AWG		mm <sup>2</sup>	AWG	
15A	4	12	M5	4	12	M5
25A	6	10	M5	6	10	M5
35A	10	8	M5	10	8	M5
45A	10	8	M5	10	8	M5
60A	16	6	M6	16	6	M6
90A	35	3	M6	35	3	M6
110A	35	2	M6	35	2	M6
Current	Auxiliary Supply			Earth		
	Cable		Screw	Cable		Screw
	mm <sup>2</sup>	AWG		mm <sup>2</sup>	AWG	
15A	0,50	18	M4	4	12	M4
25A	0,50	18	M4	4	12	M4
35A	0,50	18	M5	6	10	M5
45A	0,50	18	M5	6	10	M5
60A	0,50	18	M5	6	10	M5
90A	0,50	18	M5	6	10	M5
110A	0,50	18	M5	6	10	M5

Current	Torque (Couple) lb-in (N-m)	Wire Range /cables adoptés	Wire Terminal /Terminal
15A, 25A, 35A, 45A	26.6 (3.0)	18-8	Wire Pin Terminal /Terminal
60A, 90A, 110A	70.8 (8.0)	18-1	- Fork/Spade terminal (terminal avec cosse a fourche) - Copper Tube Cr. Lug (cosse tubulaire a plage étroite)



**FUSE AND FUSEHOLDER SIZE**

PT3000 unit must be protected by fuses against short circuit selecting the proper I<sup>2</sup> t that must be lower than thyristor one. The same caution must be taken if Circuit Breaker is used. Remember that is very difficult to protect the thyristor if this choice is done.

High speed fuses are only used for the thyristor protection and can not be used to protect the installation

External (Recommended) Semiconductor Fuses

UL Recognised or classified Fuses manufactured by									
Bussmann Div Cooper (UK) Ltd (200 kA <sub>RMS</sub> Symmetrical A.I.C.)					Ferraz Shawmut SA (200 kA <sub>RMS</sub> Symmetrical A.I.C.)				Qty
Fuse Mod. No.	Current (A <sub>RMS</sub> )	Ratings I <sup>2</sup> t (A <sup>2</sup> sec)		V ac	Fuse Mod. No.	Current (A <sub>RMS</sub> )	Ratings I <sup>2</sup> t (A <sup>2</sup> sec)		V ac
15A	FWC 16A10F	16	150	600	660 Grb 10-16	16	145	660	1
25A	FWC 32A10F	32	600	600	660 Grb 10-32	32	740	660	1
35A	FWP 40A14F	40	980	700	CP URC 14x51/40	40	700	660	1
45A	FWP 50A14F	50	1800	700	CP URC 14x51/50	50	1500	660	1
60A	FWP 80A22F	80	5100	700	CP URD 22x58/80	80	3800	660	1
90A	--	--	--	--	CP URQ 27x60/125	125	6970	660	1
110A	--	--	--	--	CP URQ 27x60/160	160	15000	660	1

**Warranty condition**

We give a 12 months warranty to its products. The warranty is limited to repairing and parts substitution in our factory with exclusions of fuses. Warranty does not include products with serial numbers deleted. The faulty product should be shipped to the factory at customer's cost and our Service will evaluate if product is under warranty terms. Substituted parts remains of Factory property.

CE Mark Fuses

PT3000 SERIE	I <sup>2</sup> T (max) (A <sup>2</sup> sec.)	Size and current	Fuse and Fuseholder CODE	Fuse CODE
15	600	10,3X38 / 16A	FFH1038/16A	FU1038/16A
25	600	10,3X38 / 32A	FFH1038/32A	FU1038/32A
35	780	14X15 / 40A	FFH1451/40A	FU1451/40A
45	1500	14X15 / 50A	FFH1451/50A	FU1451/50A
60	3800	22X58 / 80A	FFH2258/80A	FU2258/80A
90	6970	22X58 / 125A	FFH2258/125A	FU2258/125A
110	11000	27X60 / 160A	FFHPSI27/160A	FFHPSI27/160A

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