

# CD3000 S-1 PH

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 (Risque the choque électrique)**

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(attention)**

- 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(Protection)**

CD3000 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(équipement de type ouvert)..

Maximum surrounding air temperature 40°C(Temperature de l'air environnante maximum 40°C).

### **Earth(terre)**

CD3000 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 (compatibilité électromagnétique)**

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

### **Emissions (Emission)**

All thyristor switching at high speed generate some radiofrequency disturbance. CD3000 serie 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 CD3000S unit examine for damages or deficiencies. If any is found, notify the carrier immediately. Check that the product features shown on CD3000S cover corresponds to that ordered.

Before to switch on the unit verify:

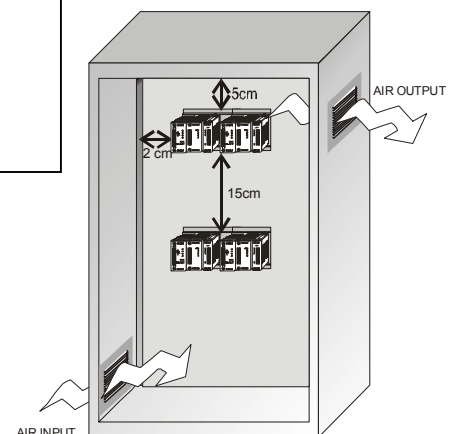
- Load current equal or less than nominal
- Main voltage equal or less than nominal
- Remember to supply fan at 230V on 110A unit

## **INSTALLATION**

CD3000S 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   |
| Heatsink                  | 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                |

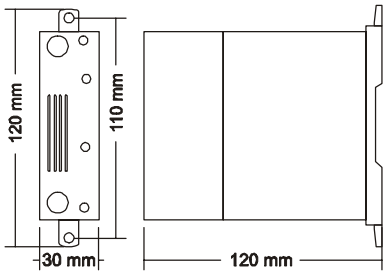
| Size (A) | Voltage range (V) | Ripetitive peak reverse voltage |      | Latching current (mAeff) | Max peak one cycle (10ms) (A) | Leakage current (mAeff) | I <sup>2</sup> T value for fusing tp=10m sec | Frequency range (Hz) | Power loss I=Inom (W) | Isolation Voltage Vac |
|----------|-------------------|---------------------------------|------|--------------------------|-------------------------------|-------------------------|--|----------------------|-----------------------|-----------------------|
|          |                   | 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

CD3000S 1PH/ [ ] / [ ] / [ ] / [ ] / [ ] / [ ] / [ ]

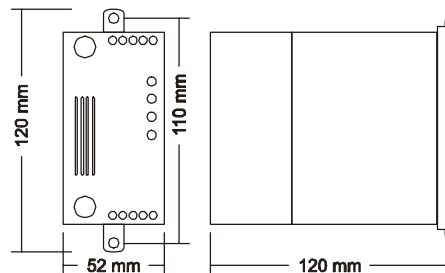
|   |  |  |  |  |   |  |
|---|--|--|--|--|---|--|
| <b>CURRENT</b>  | <b>OPER. VOLTAGE</b>   | <b>MAX VOLTAGE</b>   | <b>AUX. VOLTAGE</b>  | <b>INPUT</b>   | <b>FIRING</b>   | <b>OPTIONS</b>   |
| <ul style="list-style-type: none"> <li>• 2x10A</li> <li>• 15A</li> <li>• 25A</li> <li>• 35A</li> <li>• 45A</li> <li>• 60A</li> <li>• 90A</li> <li>• 110A</li> </ul> | <ul style="list-style-type: none"> <li>• 240V</li> <li>• 480V</li> <li>• 600V</li> </ul> | <ul style="list-style-type: none"> <li>• 240V</li> <li>• 480V</li> <li>• 600V</li> </ul> | <ul style="list-style-type: none"> <li>• 230V</li> <li>• 460V</li> </ul> | <ul style="list-style-type: none"> <li>• SSR</li> <li>• 110Vac</li> <li>• 230Vac</li> <li>• LP4-20mA (loop powered)</li> </ul> | <ul style="list-style-type: none"> <li>• ZC</li> <li>• BF (only with input LP4-20mA)</li> </ul> | <ul style="list-style-type: none"> <li>• EF (ext. fuses)</li> <li>• NF (int. fuses)</li> <li>• HB</li> <li>• UL (cert.)</li> <li>• FAN 110V</li> </ul> |

S0 - CD3000 15-25A

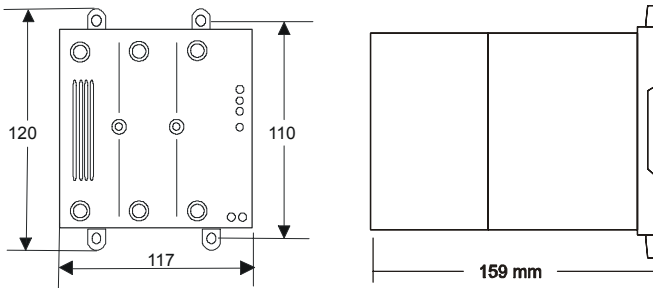


Size S0 e S1 DIN rail mounting or panel mounting with 4mm screw.  
Size S4 e S5 panel mounting with 4mm screw.

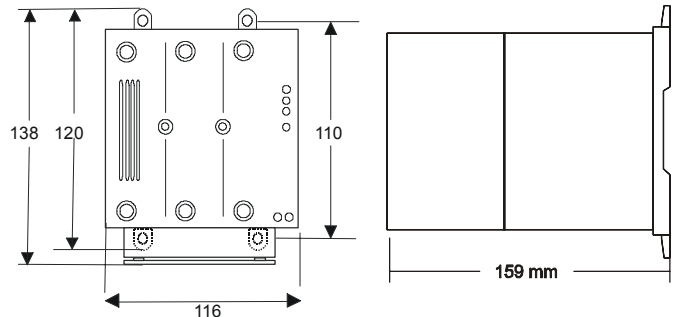
S3 - CD3000 35-45A

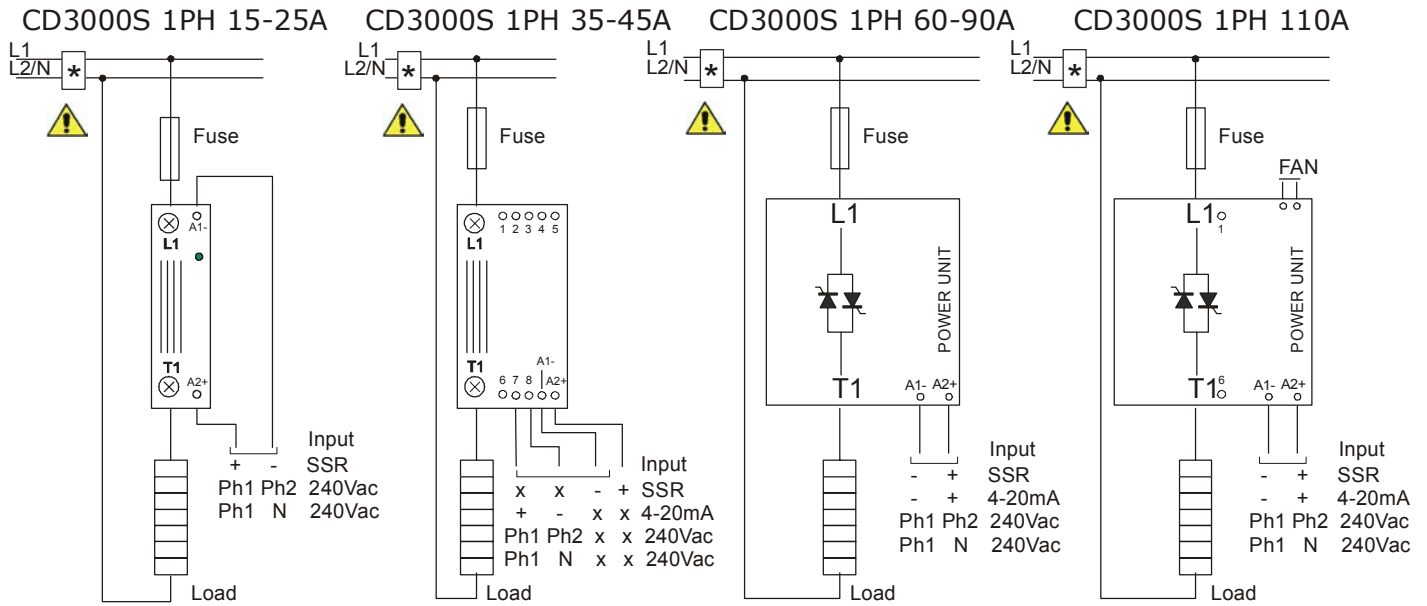


S7 - CD3000 60-90A



S8 - CD3000 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 |

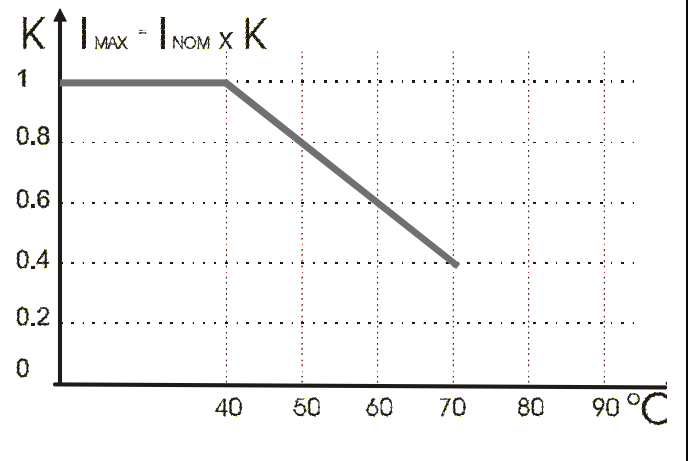
\* The user installation must be protected by electromagnetic circuit breaker or by fuse isolator

**WIRING INSTRUCTIONS**

CD3000 serie has isolated heatsink. For safety connect the heatsink to earth using its terminal with earth symbol. CD3000 serie 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

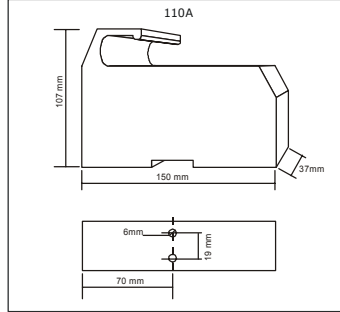
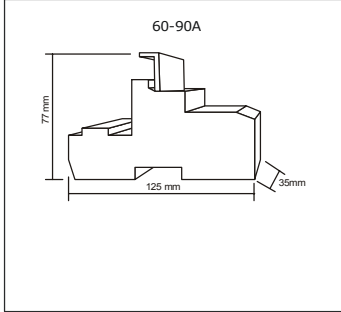
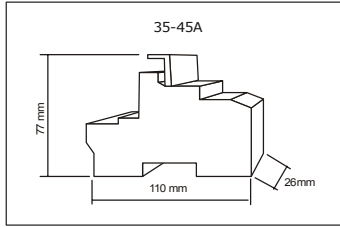
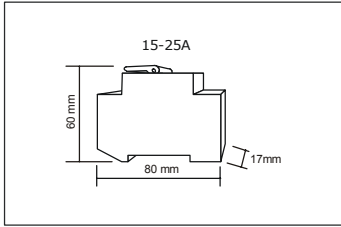
**DERATING GRAPH**



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<br>M | Cable           |     | Screw<br>M |
|         | 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<br>M | Cable           |     | Screw<br>M |
|         | 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)<br>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)<br>- Copper Tube Cr. Lug (cosse tubulaire a plage étroite) |



**FUSE AND FUSEHOLDER SIZE**  
 CD3000 unit must be protected by fuses against short circuit selecting the proper  $I^2 t$  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<br>Cooper (UK) Ltd<br>(200 kA <sub>RMS</sub> Symmetrical A.I.C.) |                             |  |      |      | Ferraz Shawmut SA<br>(200 kA <sub>RMS</sub> Symmetrical A.I.C.) |                             |  |     | Qty  |
| Fuse Mod. No.   | Current (A <sub>RMS</sub> ) | Ratings<br>I <sup>2</sup> t (A <sup>2</sup> sec) |      | V ac | Fuse Mod. No.   | Current (A <sub>RMS</sub> ) | Ratings<br>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<br>14x51/40  | 40                          | 700  | 660 | 1    |
| 45A   | FWP 50A14F                  | 50   | 1800 | 700  | CP URC<br>14x51/50  | 50                          | 1500   | 660 | 1    |
| 60A   | FWP 80A22F                  | 80   | 5100 | 700  | CP URD<br>22x58/80  | 80                          | 3800   | 660 | 1    |
| 90A   | --                          | --   | --   | --   | CP URQ<br>27x60/125   | 125                         | 6970   | 660 | 1    |
| 110A  | --                          | --   | --   | --   | CP URQ<br>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 |  |                  |                          |               |
|---------------|--|------------------|--------------------------|---------------|
| CD3000 SERIE  | I <sup>2</sup> T (max) (A <sup>2</sup> sec.) | Size and current | Fuse and Fuseholder CODE | Fuse CODE     |
| <b>15</b>     | 600  | 10,3X38 / 16A    | FFH1038/16A              | FU1038/16A    |
| <b>25</b>     | 600  | 10,3X38 / 32A    | FFH1038/32A              | FU1038/32A    |
| <b>35</b>     | 780  | 14X15 / 40A      | FFH1451/40A              | FU1451/40A    |
| <b>45</b>     | 1500   | 14X15 / 50A      | FFH1451/50A              | FU1451/50A    |
| <b>60</b>     | 3800   | 22X58 / 80A      | FFH2258/80A              | FU2258/80A    |
| <b>90</b>     | 6970   | 22X58 / 125A     | FFH2258/125A             | FU2258/125A   |
| <b>110</b>    | 11000  | 27x60 / 160A     | FFHPSI27/160A            | FFHPSI27/160A |

