

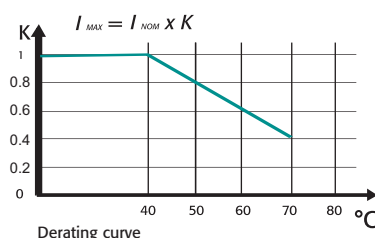


## GENERAL DESCRIPTION

- CD3000E 2PH is a Full digital and universal Thyristor unit based on a very powerful dedicated micro configurable via serial communication port for all inputs, firing modes, control modes and loads types.
- Integrated fixed fuses and all what is necessary to have a complete power control zone including current transformer and optional circuit board
- Two leg switching three wires load star or delta connections.
- Suitable to drive resistive loads and three phase transformer.
- Frontal Key Pad to control the unit and to read power, current and voltage value.
- Universal Input signal with automatic zero/span calibration.
- Universal Firing modes, customer configurable via Rs485 comm. Modbus or communication port as Burst Firing, Single Cycle and Delayed Triggering.
- Power, voltage and current control mode
- Unbalanced load and Heater Break Alarm.
- RS 485 port. Modbus protocol.
- Comply with EMC  $\text{CE}$  and  $\text{UL}$
- IP20 Protection

## TECHNICAL SPECIFICATION

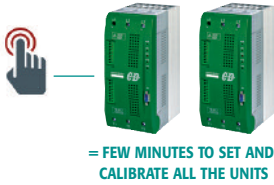
<b>Operating Temperature</b>	0+40°C over this temperature see derating curve
<b>Voltage Power supply</b>	Range 330V to 480V, 600V on request
<b>Auxiliary Voltage Supply</b>	90÷265V; 20VA power consumption. Fan voltage supply: 230V ±15% as a standard and 110V on request.
<b>Analog Input 1</b>	Primary reference, Current Input      4÷20mA, 500 Ohm, Voltage Input      0÷10V, 40 KOhm Potentiometer input    10K min.
<b>Analog Output</b>	n. 1 analog output 0÷10V or 4÷20 mA, to retransmitted One of this value Current, Voltage or Power that is used as Control Mode
<b>Digital Input</b>	Four optoisolated digital input (12=24Vdc), for START, STOP, CALIBRATION and RESET ALARM
<b>Digital Output</b>	Two optoisolated digital output 12Vdc
<b>Relay Output</b>	Critical alarm
<b>Universal Firing</b>	One of these firing modes can be configured on line via serial port: Burst Firing BF, Single Cycles SC, Delayed Triggering
<b>Control Mode</b>	Voltage (V) and Power (VxI) and current (I)
<b>Heater Break Alarm</b>	Circuit microprocessor based to diagnose partial or total load failure and short circuit on Thyristors
<b>Unbalanced load</b>	This protection allow to have CD3000E working up to 20% of unbalance on one of phases.
<b>Communication</b>	RS485 Port. Modbus communication protocol 9600 or 19200 bauds
<b>Thermal protection</b>	Available on forced ventilated units
<b>Fuses</b>	Hight speed fuses fitted internally
<b>Mounting</b>	Panel mounting. IP20 Protection.



## OPTION'S FEATURES AND SPECIAL DETAILS

### 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  $V/I$ .

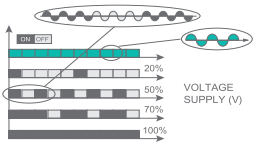
The Heater Break circuit is compensated for voltage fluctuation, in fact a voltage variation has no influence on resistance value because  $V/I$  ratio remain constant.

On this unit is possible to set the nominal current 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.

### 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).

### 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.

### CD EASY



This is a memory support tool that can be used by maintenance personnel on shop floor.

The user can copy the configuration of one unit and paste it into another. CD EASY is very simple with one push button to upload the configuration (Read) and another to download the stored configuration (Write)

This tool can be used with our Remote service to mail the working configuration via internet.

### FIELD BUS MODULE



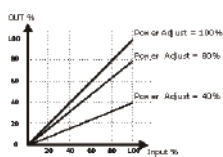
CD-RS Used to convert RS232 to RS422

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 setted 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.

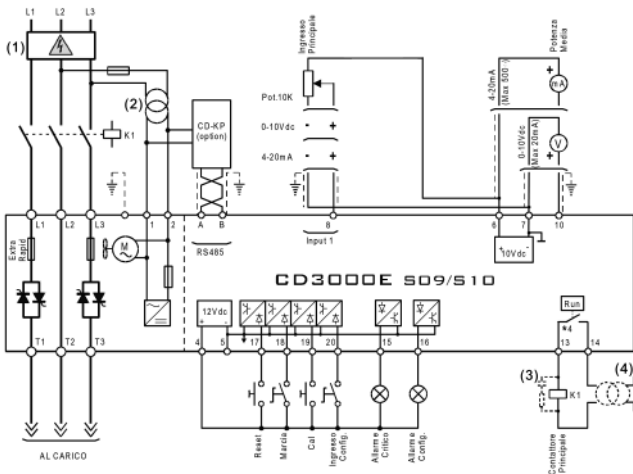
Imagine 3 zones with left and right one close to the door where in a continuous furnace the material come into and flow out. The profile of temperature along furnace is higher in central zone because there is less dispersion but if we scale its input we can have a flat profile.

### APPLICATIONS AND FOCUS ON:

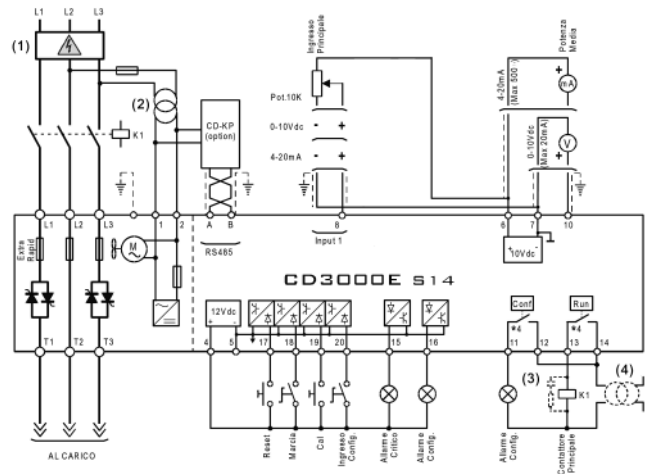
- Infrared lamp.
- Autoclaves.
- Furnaces.
- Chemical
- Petrochemical
- Climatic chambers
- Pharmaceutical

# WIRING CONNECTION CD3000E 2PH from 35 to 700A

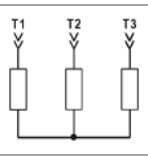
**CD3000E Size S09/S10**



**CD3000E Size S14**

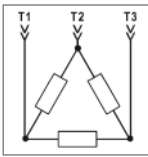


**LOAD TYPE**



STAR without neutral  
Resistive or  
Infrared Lamps  
Long and  
medium waves

**LOAD TYPE**

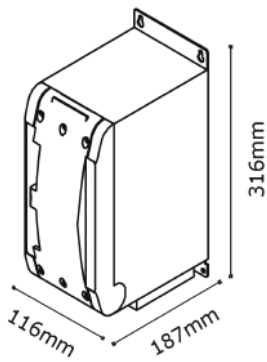


DELTA  
Resistive or  
Infrared Lamps  
Long and  
medium waves

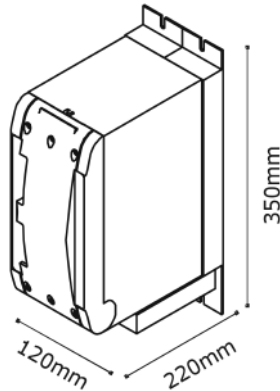
**NOTE**

- (1) • The user installation must be protecting by electromagnetic circuit breaker or by fuse isolator.
- (2) • Use an appropriate external transformer based on the voltage supply of the electronic board (see the identification label)
- (3) • The coil contactor, the relays and other inductive loads must be equipped with opportune RC filter.
- (4) • Before give the Start command supply the auxiliary voltage

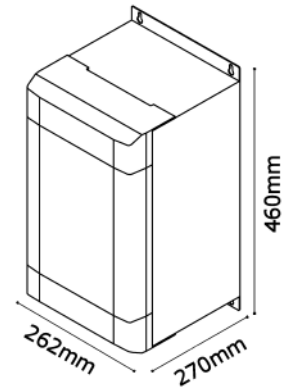
**DIMENSION AND FIXING HOLES**



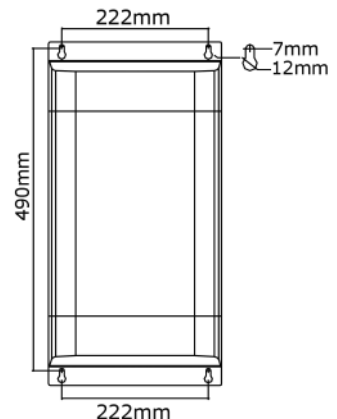
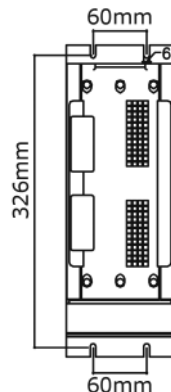
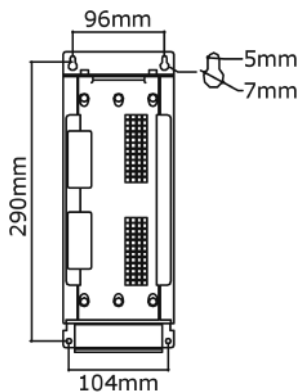
**SIZE S09 25A÷150A**



**SIZE S10 200A**



**SIZE S14 275A÷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	I <sup>2</sup> T value for fusing tp=10msec.	Frequency range (Hz)	Power loss I=I <sub>nom</sub> (W)	Isolation Voltage Vac
25A	330÷600V	1600	1600	450	500	15	1030	47÷70	60	2500
35A	330÷600V	1600	1600	450	500	15	1030	47÷70	84	2500
45A	330÷600V	1600	1600	450	1000	15	4750	47÷70	108	2500
75A	330÷600V	1600	1600	450	1000	15	4750	47÷70	180	2500
100A	330÷600V	1600	1600	450	1540	15	11300	47÷70	240	2500
125A	330÷600V	1600	1600	450	2000	15	19100	47÷70	300	2500
150A	330÷600V	1600	1600	300	5250	15	12800	47÷70	360	2500
200A	330÷600V	1600	1600	300	5250	15	12800	47÷70	480	2500
275A	330÷600V	1600	1600	300	4800	15	108000	47÷70	660	2500
400A	330÷600V	1600	1600	200	7800	15	300000	47÷70	960	2500
450A	330÷600V	1600	1600	200	7800	15	300000	47÷70	1080	2500
500A	330÷600V	1600	1600	200	8000	15	306000	47÷70	1200	2500
600A	330÷600V	1600	1600	1000	17800	15	1027000	47÷70	1440	2500
700A	330÷600V	1600	1600	1000	17800	15	1027000	47÷70	1680	2500

## Fan Specification

Supply: 230V Standard	Input Power 17W
Supply: 115V Option	Input Power 14W

## ORDERING CODES CD3000E 2PH

																Note 1																	
CD3000E 2PH																16																	
																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
CD3000E 2PH																R	E	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>4, 5, 6</b> Current		<b>9</b> Input		<b>12</b> Option		<b>16</b> Load type/Connection																											
<b>Description code</b>	<b>Numeric code</b>	<b>Description code</b>	<b>Numeric code</b>	<b>Description code</b>	<b>Numeric code</b>	<b>Description code</b>	<b>Numeric code</b>																										
35A	0 3 5	SSR 3:30V dc	S	Control Mode		Resistive Load/ Delta Connection	1																										
45A	0 4 5	0:10V	V	Retransmission 4:20mA	A	Resistive Load/ Star Connection	2																										
75A	0 7 5	4:20mA	A	Control Mode		Resistive Load/ Star Connection + Neutral	7																										
100A	1 0 0	10KPot	K	Retransmission 0:10V	V	Transformer Load/ Delta Connection	3																										
125A	1 2 5	RS485	R			Transformer Load/ Star Connection	4																										
150A	1 5 0	<b>10</b> Firing		<b>13</b> Fan Voltage		Transformer Load/ Star Connection + Neutral	5																										
225A	2 2 5	<b>Description code</b>	<b>Numeric code</b>	<b>Description code</b>	<b>Numeric code</b>	Transformer Load/ Star Connection	6																										
300A	3 0 0	Zero Crossing ZC	Z	Fan Voltage equal to Aux. Voltage	3																												
350A	3 5 0	Single Cycle SC	C	<b>14</b> Approvals																													
400A	4 0 0	Burst Firing BF	B	<b>Description code</b>	<b>Numeric code</b>																												
450A	4 5 0	Soft Start + Burst Firing S+BF	J	CE EMC For European Market	0																												
500A	5 0 0	Delayed Triggering + Burst Firing DT+BF	D (2)	cUL For American Market (Pending)	L																												
<b>7</b> Max Voltage		Phase Angle PA	P	<b>15</b> Manual																													
<b>Description code</b>	<b>Numeric code</b>	Soft Start + Phase Angle S+PA	E	<b>Description code</b>	<b>Numeric code</b>																												
480V	4	<b>11</b> Control Mode		None	0																												
600V	6	<b>Description code</b>	<b>Numeric code</b>	Italian Manual	1																												
<b>8</b> Aux. Voltage supply		Open Loop	0	English Manual	2																												
<b>Description code</b>	<b>Numeric code</b>	Voltage Feedback V	U	German Manual	3																												
110V	1	Power Feedback VxI	W	French Manual	4																												
230V	2	Current Feedback I	I																														

**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

