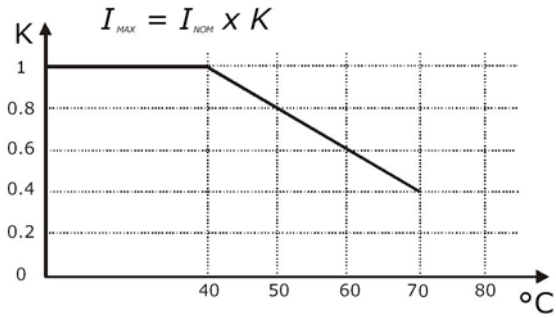
CD3000S-1PH
Solid-state relay

General description

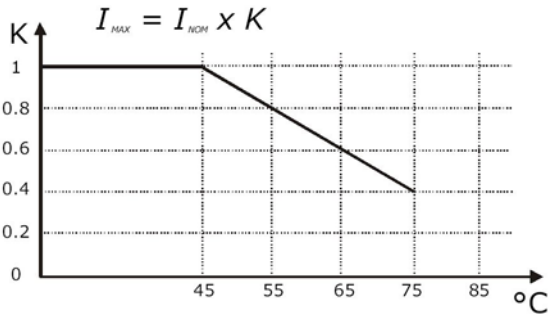
- CD3000S 1PH is a compact low cost family of solid state switches designed to replace contactors.
- Single-phase thyristor units up to 700A.
- Applicable for resistive loads and infrared lamp*.
- Zero crossing firing available with logic input signal (SSR) or as an option with Ac 110 Vac or 230 Vac input from 15A to 110A.
- Constant current drain with SSR input.
- Basic analog input 4÷20mA loop powered, with burst firing 8 or 16 cycle at 50% power requested, is available as an option from 15 to 110A.
- Analog input 4÷20mA or 0÷10V with Burst firing 4, 8 or 16 cycle at 50% power requested, is available as an option from 15 to 110A.
- Heater Break alarm (HB) to diagnostic partial or total load failure and short circuit on Thyristor, is available as an option from 15A to 110A.
- Side by side mounting.
- Special design for heatsink with high dissipation.
- IP20 protection**.
- Comply with EMC.specification CE and cULus

Technical specification

Voltage power supply	24V min., 480V max. and 600V on request.
Input signal	SSR (OFF state <1Vdc, ON = 4÷30 Vdc) is standard up to 700A included. Ac Input 110V or 230Vac is available as an option on units from 15A÷110A included; Loop powered linear current 4÷20mA (is required a minim voltage of 6,5 Vdc) available as an option on units with from 15A÷110A included. Analog input 4÷20mA and 0÷10V is available as an option on units from 15A÷110A included.
Firing	Zero Crossing ZC; Burst Firing 8/16 with 4-20mA loop powered; Burst Firing 4/8/16 with 4-20mA or 0-10V with 12-24V aux. power supply.
Auxiliary voltage supply	From 230V to 460V is necessary on units => 110A; 10VA are requested for CD3000S => 125A; 12-24V are requested with HB option or with analog input (with the exclusion of loop powered input).
Fan voltage supply	230V ±15% standard for unit egual or over 110A (110V is available on request as an option).
Heater break alarm	Discrimination better than 20%. Circuit microprocessor based to diagnose partial or total load failure and short circuit on Thyristor. Latching alarm plus reset. Relay output 1A at 230V. Automatic calibration of one or more unit at the same time using a dedicated digital input or using for each unit the calibration button.
Mounting	Din rail mounting up to 110A included, bulkhead over 110A, IP20 protection**.
Operating temperature	0÷40°C up to 110 A included. 0÷45°C from 125÷700A, for higher temperature see the derating curve



Thyristor unit up to 110 A included



125÷700A

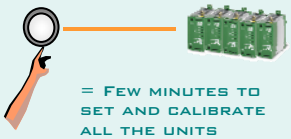
Note:

- * If you are going to use Infrared lamp with short wave, we recommend contacting our sales/technical department to well size the unit and to choose the correct options (please communicate the type and model used or the peak of the current value).
- ** Verify if it is standard or optional looking the size chose (page 3 and 4).

Option's features

Heater Break Alarm (HB)

On front cabinet



= Few minutes to set and calibrate all the units

- Microprocessor based
- Self learning of current set, via external command or push button on front unit
- Load brake diagnostic with alarm latch.
- Thyristor short circuit diagnostic.
- Alarm reset function and possibility to auto reset the alarm if the normal working condition is restored.
- Alarm output with free voltage contact.
- Available from 15A÷110 A incl.
- Full insulation between SSR output coming from controller/multi loop and power supply, no common zero in our unit.
- Easy and fast substitution /calibration of the unit (also not expert people can do it easy.
- Available also with analogic input.

Analog Input and Burst Firig

- Analog Input is available from 15 to 110 A with CE mark. .
- Burst Firing is selectable with link jumper between BF04 – 08 – 16.
- Heater break alarm is available as an option.
- Analog input options offer the same precision of CD3000M series.
- Possibility to chose between 4÷20mA or 0÷10V input
- Must be used for 1PH loads only.
- Note: 15÷25A version with analog input has Max. Voltage supply up to 240V or 480V only.

Loop Powered input 4÷20mA + Burst Firing

- Loop powered 4-20mA option will let you to have a 4-20mA input powered by the sources and a burst firing BF08 –16 selectable only during order phase.
- This option represents the entry level of Burst Firing control.
- Is available up to from 15 to 110 A with CE mark and cUL us approval.
- Must be used for 1PH loads only

HB version with internal current transformer (ICT)

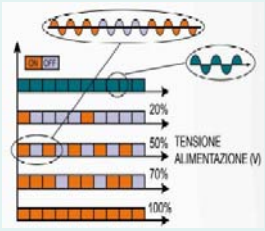
On CD3000S 1PH unit with HB and ICT options, the current transformer is located inside the unit to save spaces inside the cabinet. This features is standard on CD3000S 15÷25A, and optional on CD3000S 1PH 35÷45 A

- Compact.
- Available from 15 ÷ 45 A.
- Available also with analog input.

On 35÷45 A version write: ICT inside the code to request it as an option.

Note: 15÷25A version with HB has Max. Voltage supply up to 240V or 480V only.

Burst Firing



Example of BF

This firing performed in digital mode in our unit gives a lot of advantage because switch thyristor faster than normal ZC and at the same time without EMC interferences. Analog input is necessary for BF and can be decided how many complete cycles We wont at 50% of power demand. On CD3000S this value can be 04, 08 or 16. To have a better resolution you must choose CD3000M 1PH series, where the BF value can be implemented from 1 to 255 complete cycles doing the firing less or more fast. When 1 is selected the firing name becomes Single Cycle.

HB with external current transformer

- Possibility to turn around the wire on the current transformer if the nominal current is smaller compared the ones detectable by current transformer. Es: 3A with a CT of 50A
- Single CT (included on basic price of HB option).
- CT with metallic clips for horizontal DIN rail mounting (opt).
- CT with plastic for vertical DIN rail mounting (opt.)

AC Input 110 – 230 V

- These two kinds of input are designed to substitute electromechanical contactor in already existing cabinet without to modify the temperature controller output. Are ideal for revamping.
- Zero Crossing firing(ZC).
- cUL us approval and CE mark.

CD3000S – 2x10 A 240V

- CD3000S 2x10 has been designed to drive two loads with 10A current and 240V max. line voltage.
- The units provides two insulated independent SSR input circuit
- Zero Crossing firing,
- Very compact unit with high-density mounting side by side. to reduce cabinet dimensions and price.
- High efficient heatsink with chimney effect.
- Easy accessible control circuit board on front unit.

Other performances with other series

The CD3000M - 1PH series

- Software configurability.
- BF higher resolution from 1 (Singol Cycle) to 265.
- RS485 Modbus std; Profibus DP opt.
- CD-KP Keypad 48x96 on front cabinet to display V-I-P, with local/remote facilities, retransmission of one of the following parameters V,I P.
- Power Scaling
- Internal power supply

See the general catalog for all model and size.

THYRISTOR UNIT CD3000S - 1PH ORDERING CODE

Model / Max current	CE only					CE UL CSA			
	Max. Voltage Supply			Fuse & Fuse holder	HB Analog	Max. Voltage Supply		Fuse & Fuse holder	HB Analog
	240V	480V	600V	(1 off)	Input	480V	600V	(1 off)	Input
2x10	A	NA	NA	EF/NF	NA	NA	NA	EF/NF	NA
15	A	A	A	EF/NF	A	A	A	EF/NF	NA
25	A	A	A	EF/NF	A	A	A	EF/NF	NA
35	A	A	A	EF/NF	A	A	A	EF/NF	NA
45	A	A	A	EF/NF	A	A	A	EF/NF	NA
60	A	A	A	EF/NF	A	A	A	EF/NF	NA
90	A	A	A	EF/NF	A	A	A	EF/NF	NA
110	A	A	A	EF/NF	A	A	A	EF/NF	NA
125		A	A	IF	NA	A	A	IF	NA
150		A	A	IF	NA	A	A	IF	NA
200		A	A	IF	NA	A	A	IF	NA
300		A	A	IF	NA	A	A	IF	NA
400		A	A	IF	NA	A	A	IF	NA
500		A	A	IF	NA	A	A	IF	NA
600		A	A	IF	NA	A	A	IF	NA
700		A	A	IF	NA	A	A	IF	NA

	Code	Description	Charge
Operating voltage supply	xxxV	Specify the operating voltage (Should be below the max supply voltage)	NC
Auxiliary voltage supply	None	No auxiliary voltage supply up to 110A included and without option where is a specific request.	NC
	12÷24V ac dc	Necessary with 0÷10V or 4÷20mA input or with HB Option	NC
	230V	It's necessary to specify the auxiliary supply voltage on units > 110A	NC
	460V		NC
	600V		NC
Input - Firing - Options Note: Is possible to chose Only one combinations.	SSR / ZC / -	from 4 to 30 Vdc, Zero Crossing, standard **(4)**	NC
	SSR / ZC / HB	from 4 to 30 Vdc, Zero Crossing, Heater Break; option available from 15A÷110A **(1)**	C
	110V ac / ZC / -	ac input / Zero Crossing; option available from 15A÷110A **(4)**	C
	230V ac / ZC / -	ac input / Zero Crossing; option available from 15A÷110A **(4)**	C
	4÷20 mA loop powered / BF(..) / -	This circuit is used for simple Burst Firing 8 or 16 cycles selectable at 50% of power demand; option available from 15A÷110A **(3) (4)**	C
	4÷20 mA / BF(..) / -	Analog input 4÷20mA / Burst Firing 4, 8 or 16 selectable with link jumper; option available from 15A÷110A **(1)(2)**	C
	0÷10V / BF(..) / -	Analog input 0÷10V / Burst Firing 4, 8 or 16 selectable with link jumper; option available from 15A÷110A **(1)(2)**	C
	4÷20mA / BF(..) / HB / -	Analog input 4÷20mA; Burst Firing 4, 8 or 16; Heater Break Alarm; option available from 15A÷110A **(1)(2)**	C
	0÷10V / BF(..) / HB / -	Analog input 0÷10V; Burst Firing 4, 8 or 16; Heater Break Alarm; option available from 15A÷110A **(1)(2)**	C
Other Options	NF	No Fuse. This option is available up to 110A included **(5)**	NC
	EF	External Fuse + Fuse Holder up to 110A included	C
	IF	Internal fuses are standard > 110A	NC
	ICT	Internal current transformer is an option with HB from 35÷110A and it's standard from 15÷25A	C
	110v Fan	Fan at 110v is an option that is possible starting from 110A included.	C
	UL	If you need cUL approval specify it in the code	C
	IP	IP20 is standard on all sizes with exception of 60-90-110A where need a terminal protection to comply with IP20	C

IF = Internal Fuses; EF = External Fuses+Fuse holder; NF = No Fuses; NC = No Charge € $; C = Charge € $; NA = Not Available; A = Available

(1) Available with CE mark only, to have cULus see CD3000M series pricelist - **(4)** This option is cUL us Listed – **(5)** The use of the fuses is necessary to protect the unit.
(2) Default value is 8 cycles at 50% power demand if you need 4 or 16 specify inside code breaket ex: 4÷20mA/BF(8)
(3) Default value is 8 cycles at 50% power demand if you need 16 specify inside code breaket ex: 4÷20mA/BF(16)
Note: From 35 to 100A HB option include the price of external current transformer without metallic clips or plastic Din rail module options.
From 15 to 25A, HB option include the price of internal current transformer, that is standard and the Max. Voltage available can be only 240V or 480V.

Code example: Model	Current	Op.Volt	Max Volt.Supply	Aux.Volt.	Input / Firing / Other Option	Opt. 1	Opt. 2	Opt. 3
CD3000S – 1PH	45A	400V	480V	12÷24V ac dc	SSR / ZC / HB	ICT	EF	-
CD3000S – 1PH	200A	220V	480V	230V	SSR / ZC / None	UL	IF	-
CD3000S – 1PH	60	220V	220V	-	SSR / ZC / None	NF	-	-
CD3000S – 1PH	25	220V	220V	12÷24V ac dc	0÷10V / BF04 / HB	EF		

Sizes

S0	S0H	S3	S3H	S7	S8	S9	S12
							

	L	H	P
S0	30	120	120
S0H	30	120	140
S3	52	120	120

	L	H	P
S3H	52	120	140
S7	117	120	159
S8	117	138	159

	L	H	P
S9	116	316	187
S12	137	520	270

Size, approval and option

Current	Input: SSR/ LP 4÷20mA/110 Vac/ 230 Vac. Opt. HB not included			
	Size	Cooling	Approval	IP20
2x10	S0	Natural	Ce cUL us	Std
15÷25A	S0	Natural	Ce cUL us	STd
35÷45A	S3	Natural	Ce cUL us	Std
60÷90A	S7	Natural	Ce cUL us	Opt
110A	S8	+ Fan	Ce cUL us	Opt
125-150-200A	S9	+ Fan	Ce cUL us	Std
300-400-500-600-700A	S12	+ Fan	Ce cUL us	Std

Std=Standard, Opt=option

Current	Input: SSR with HB option; analog input 4÷20mA or 0÷10V with or without HB; HB option with or without ICT.			
	Size	Cooling	Approval	IP20
15÷25A	S0H °°	Natural	Ce	Std
35÷45A	S3/S3H°	Natural	Ce	Std
60÷90A	S7	Natural	Ce	Opt
110A	S8	+ Fan	Ce	Opt

° With ICT opt.
°° Available only with ICT.

Other size, characteristics and approval are available on the following series CD3000M, CD3000E and Multidrive

Input features and Heater Break

Input Signal	Input Detail	ON condition	Off condition	Heater Break (Option)
SSR	20 mA constant current drain.	≥4V-max 30V	≤1V	HB is available from 15÷110A inc.
LP 4÷20mA (Loop Powered)	6,5Vdc.minim voltage is requested			HB is not available.
4÷20mA	Impedance 100Ω			HB is available from 15÷110A inc.
0÷10V	Impedance 15KΩ			HB is available from 15÷110A inc.
110 Vac	Range 110Vac ±15% up to 20 mA	>90	<=50	HB isn't available.
230 Vac	Range 230Vac ±15% up to20 mA	>200	<=100	HB isn't available.

Auxiliary Power Supply from 125A to 700A is requested	12-24 Vac-dc Auxiliary Power Supply is Requested with 4÷20mA or
230V (Range 200V to 260V Max) or 460V (Range 330V to 500V Max)	0÷10V Input or opz.HB

Output features

Current	Voltage Range (V)	Ripetitive peak Reverse Voltage (480V)	(600V)	Latching Current (mAeff)	Max peak One cycle (10msec.) (A)	Leakage Current (mAeff)	I2T Value For fusing tp=10msec.	Frequency range (Hz)	Power loss I=Inom (W)	Insolation Voltage Vac
2x10A	24÷240 V	1200	NA	150	230	15	610	47÷70	18	2500
15A	24÷480 V	1200	NA	150	230	15	610	47÷70	18	2500
25A	24÷480 V	1200	NA	150	230	15	610	47÷70	30	2500
35A	24÷600 V	1200	1600	250	400	15	780	47÷70	42	2500
45A	24÷600 V	1200	1600	250	600	15	1800	47÷70	54	2500
60A	24÷600 V	1200	1600	450	1000	15	4750	47÷70	72	2500
90A	24÷600 V	1200	1600	450	2000	15	19100	47÷70	108	2500
110A	24÷600 V	1200	1600	450	1540	15	11300	47÷70	137	2500
125A	24÷600 V	1200	1600	450	1540	15	11300	47÷70	146	2500
150A	24÷600 V	1200	1600	450	2000	15	19100	47÷70	162	2500
200A	24÷600 V	1200	1600	300	4800	15	108000	47÷70	204	2500
300A	24÷600 V	1200	1600	300	5250	15	128000	47÷70	320	2500
400A	24÷600 V	1200	1600	200	7800	15	300000	47÷70	397	2500
500A	24÷600 V	1200	1600	200	8000	15	306000	47÷70	530	2500
600A	24÷600 V	1200	1600	1000	17800	15	1027000	47÷70	589	2500
700A	24÷600 V	1200	1600	1000	17800	15	1027000	47÷70	712	2500

Note: for more deep information about derating curve, fuseholder dimensions and wiring see our web site: www.cdautomation.com