Газоанализаторы FPG 1.0, FPG 1.1, T400

Технические характеристики

По вопросам продаж и поддержки обращайтесь:

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Оренбург (3532)37-68-04
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Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Сыктывкар (8212)25-95-17
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Тула (4872)33-79-87
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Челябинск (351)202-03-61
Череповец (8202)49-02-64
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DIRECT INTEGRATION WITH BUS SYSTEMS & SCADA

Will converse over the most popular Buses: MODBUS, DeviceNet, PROFIBUS.

APPLICATIONS

Mesa Thyristor units are rugged and designed for industrial environment.
The main applications are:

- extruders
- plastic machinery
- thermoforming machinery
- glass ovens
- electrical furnaces
- print machinery
- drying process
- car industry
- glass industry
- paper industry
- infrared application
- packaging/sealing
- general factory automation
- textile fiber machines
- semiconductor
- food/drink processing
- chemical
- petrochemical

NEW PRODUCT RANGE

1 Phase units

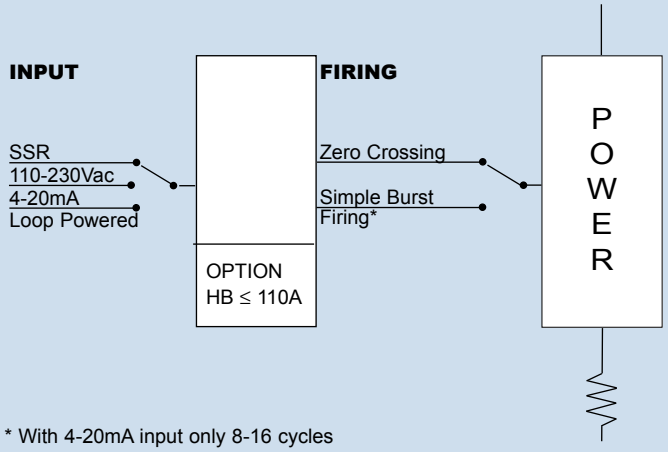
1 PH

- CD3000S - 1PH
- MULTIDRIVE 1PH
- CD3000M - 1PH
- CD3200

	CD3000S - 1PH	CD3000M - 1PH	MULTIDRIVE 1PH	CD3200
	15A - 700A	15A - 700A	1100A - 2600A	15A - 700A
SSR	•	•		
LOOP POWERED 4/20mA ≤ 110A	•			
110-230VAC ≤ 110A	•			
DRIVE M		•		
MULTIDRIVE			•	
CD-KP		•	•	•
MULTI INPUT		•	•	•
MULTI FIRING		•	•	

FAMILY S

CD3000S-1PH



* With 4-20mA input only 8-16 cycles

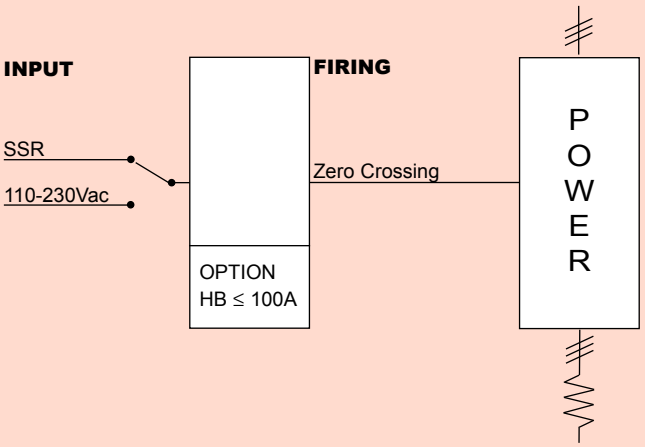
Two legs switching 3 wire loads

2 PH

- CD3000S - 2PH
- CD3000E - 2PH
- CD3000M- 2PH
- MULTIDRIVE 2PH

	CD3000S - 2PH	CD3000M- 2PH	CD3000E - 2PH	MULTIDRIVE 2PH
	15A - 700A	15A - 700A	25A - 700A	25A - 2600A
SSR	•			
110-230VAC ≤ 100A	•			
DRIVE M		•		
DRIVE E / MULTIDRIVE		•	•	
CD-KP		•	•	•
MULTI INPUT		•	•	•
MULTI FIRING			•	•

CD3000S-2PH



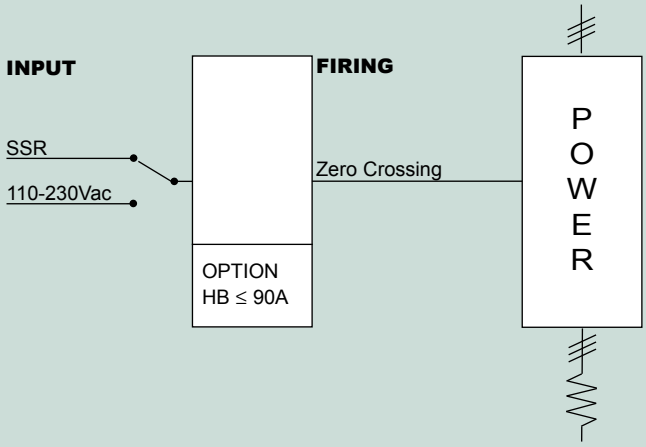
Three legs switching 3 or 4 wire loads

3 PH

- CD3000S - 3PH
- CD3000E - 3PH
- CD3000M - 3PH
- MULTIDRIVE 3PH

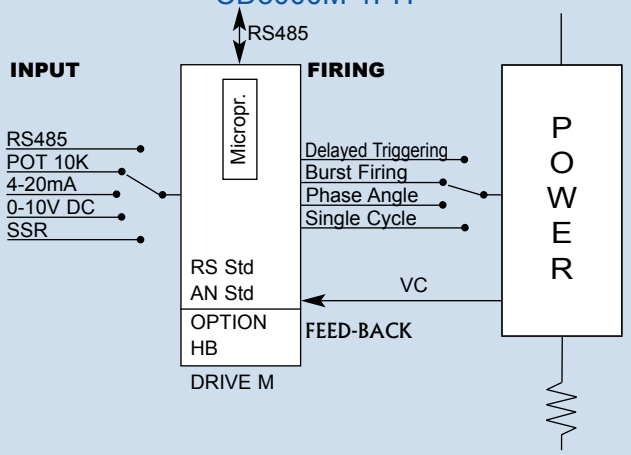
	CD3000S - 3PH	CD3000M - 3PH	CD3000E - 3PH	MULTIDRIVE 3PH
	15A - 500A	15A - 500A	25A - 500A	25A - 2600A
SSR	•			
110-230VAC ≤ 90A	•			
DRIVE M		•		
DRIVE E / MULTIDRIVE		•	•	
CD-KP		•	•	•
MULTI INPUT		•	•	•
MULTI FIRING			•	•

CD3000S-3PH



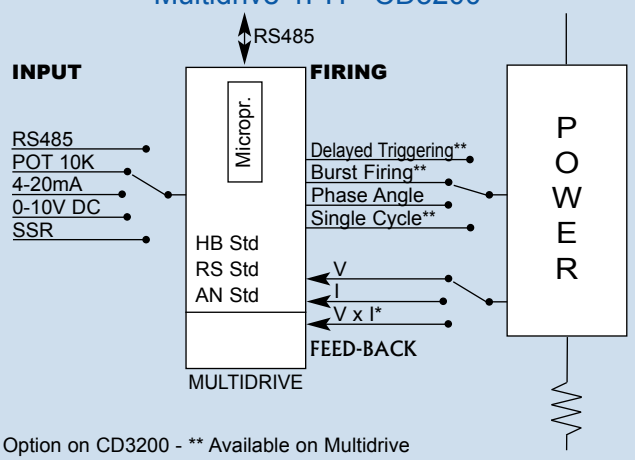
FAMILY M

CD3000M-1PH



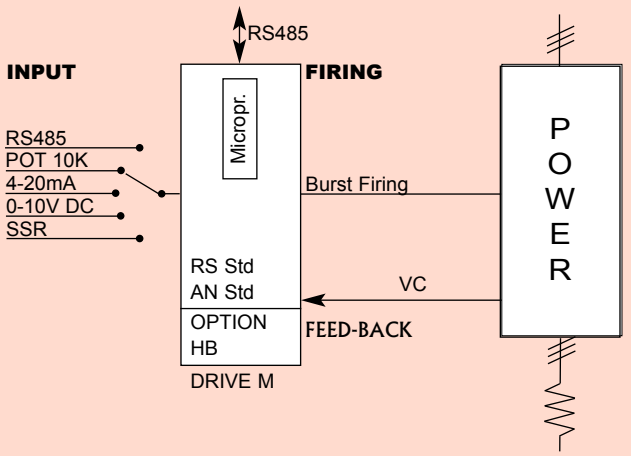
FAMILY MULTIDRIVE - CD3000E - CD3200

Multidrive-1PH - CD3200

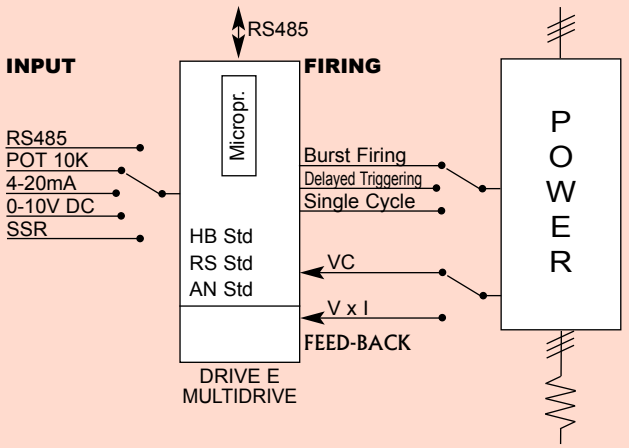


* Option on CD3200 - ** Available on Multidrive

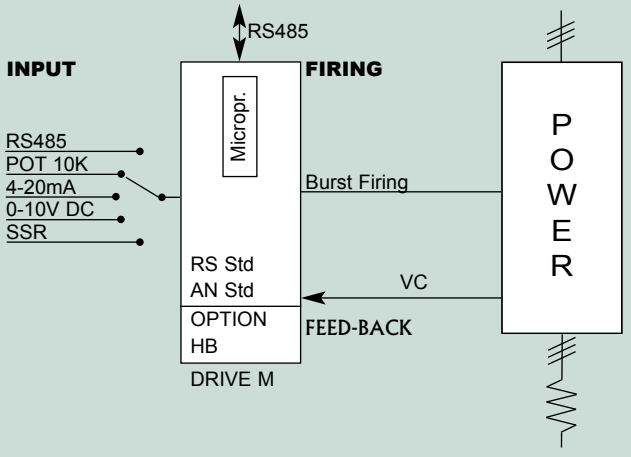
CD3000M-2PH



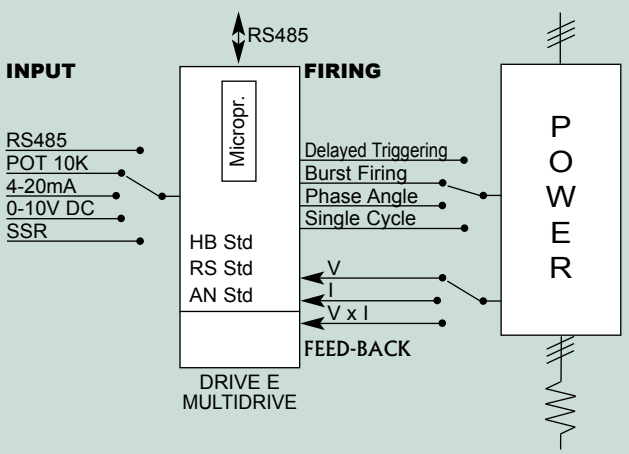
Multidrive-2PH - CD3000E-2PH



CD3000M-3PH

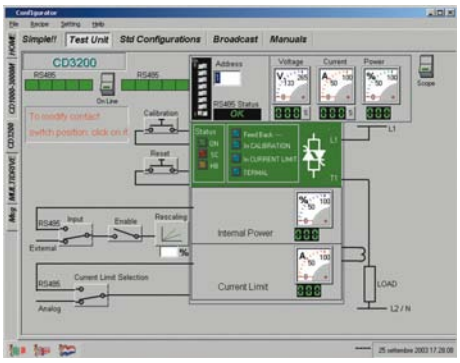


Multidrive-3PH - CD3000E-3PH



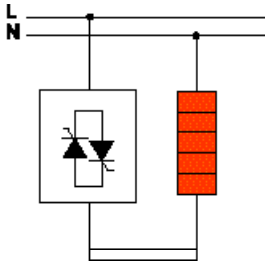
CD3000 CONFIGURATOR

- Windows based.
- Easy to use with recipe facility. Each Thyristor unit can be configured in a matter of second.
- Possibility to configure the firing mode on line without to power off the unit.
- Look for your application and download the configuration software.



• What is a Thyristor Unit

A Thyristor unit is a semiconductor device which acts as a switch formed by two Silicon Controlled Rectifiers (SCR) in antiparallel.
To switch ON the alternating current the input signal will be ON and the Thyristor will switch OFF at first zero crossing voltage with no input signal.
The benefits of Thyristor units compared with elettromechanical contactors are numerous: no mooving parts, no maintenance and capacity to switch very fast.
Thyristors are the only solution to control transformers and special loads that change resistance with temperature and with age.



• Terminology

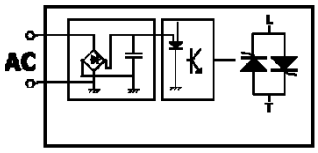
V: voltage between any two lines of a 3 phase supply.
I: the full circulating current in Thyristor unit.
P: total load power

• Input signal

SSR: This input type is a square waveform generated by a temperature controller. Firing of the unit is shown on right page.
AN: Analog input 4-20mA/0-10VDC.
POT: Potentiometer.
RS: Communication Command.

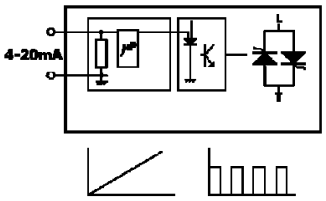
• AC INPUT 110 or 230V

This kind of input allows to drive the Thyristor unit by a 110 or 230Vac signal.



• LP 4-20mA Loop Powered.

The voltage supply for Micro is given by 4-20mA input signal. With this input is possible to have a simple Burst Firing 8 or 16 Cycles.



• Feedback

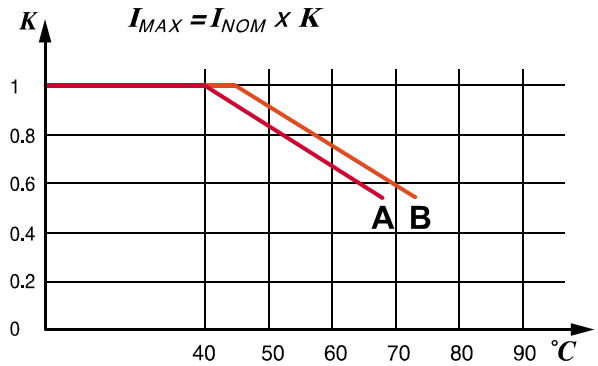
Supply voltage fluctuation changes the power to the load. To overcame this effect the voltage supplied to the load is measured and compared with power demand from controller. The error signal is used to automatically hold the power at demanded level. When the load changes its value it is necessary to use VxI feedback.

• Extra Features

HB: Heater Break circuit to diagnose partial or total load failure and short circuit on Thyristors. Thyristors units provide a microprocessor based circuit with automatic setting via a digital input.
CL: Current Limit to limit the current to the setted value from 0 to 100% of nominal current.
The Current Limit must be used with inductive loads, Molibdenum, Superkanthal, Platinum and Quartz lamp.
RS: RS485 two wires serial Communication with MODBUS Protocol. Thyristors units that provide this option, can communicate to a supervisory computer following data: current to the load, HB set, HB status.

• Derating Curve

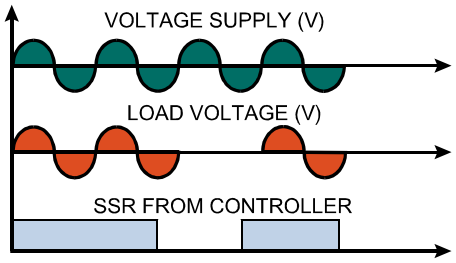
The nominal current of the units in specification is referred to continuos service at 40°C or 45°C ambient temperature.
For higher temperature multiply the nominal current times derating coefficient “K” below represented.



A: Use this curve for:
CD3000S-1PH and CD3000M-1PH • 110A
CD3000S-2PH and CD3000M-2PH • 100A
CD3000S-3PH and CD3000M-3PH • 90A
B: Use this curve for all products not included in the above list.

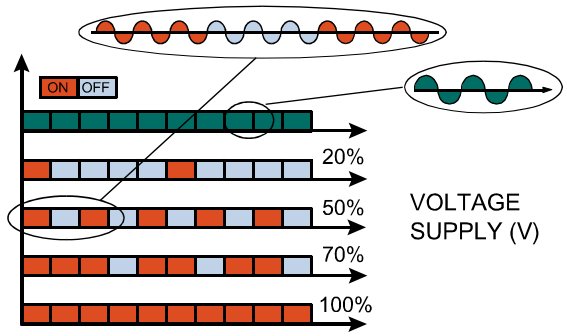
- Zero Crossing ZC

ZC firing mode is used with Logic Output from temperature controllers and the Thyristor operates like a contactor. The Cycle time is performed by temperature controller.
Zero Crossing minimizes interferences because the Thyristor unit switches ON-OFF at zero voltage.



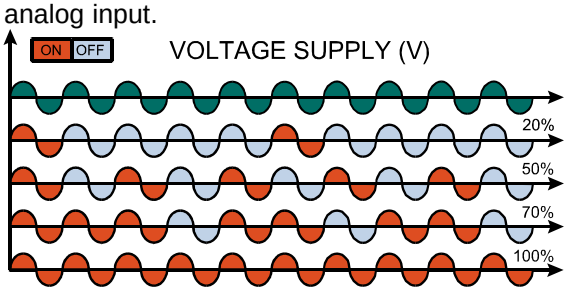
- Burst Firing BF

This firing performed in Digital mode in CD Automation Thyristor unit gives a lot of advantages because switches Thyristor at zero voltage crossing without EMC interferences. Analog input is necessary for BF and can be decided how many complete Cycles we want at 50% of power demand. This value can be implemented from 1 to 255 complete Cycles doing the firing less or more fast. When 1 is setted the firing name becomes Single Cycle (see below).



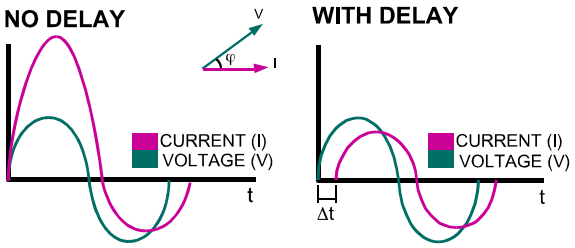
- Single Cycle SC

It's the fastest zero crossing switching method to respect the power demand from a temperature controller or an external signal. At 50% input signal is one cycle ON and one cycle OFF. At 75% is 3 cycles ON and one cycle OFF. If power demand is 76% the unit performs like for 75% but every time that switches ON the microprocessor divides 76/75 and when the sum of rest is one the unit deliveries one cycle more to the load. With this firing is necessary to have analog input.



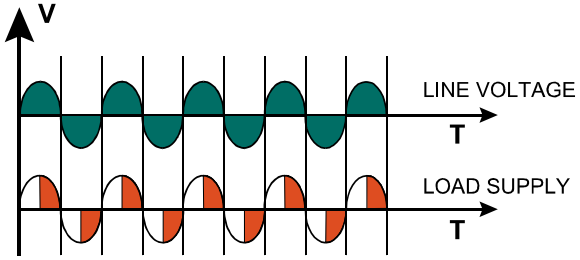
- Delayed Triggering DT

It's used to switch ON-OFF primary of transformers coupled with resistive load on secondary.
It's used to prevent inrush surge current when zero voltage switching is used.
The Thyristor unit switches OFF when load voltage is negative and switches ON only when is positive with a setted delay for the first half cycle.



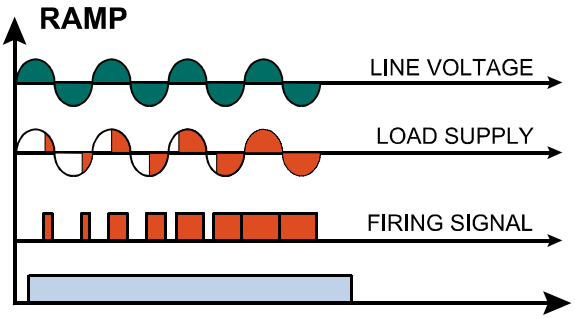
- Phase Angle PA

With Phase Angle is possible to control the power to the load allowing to Thyristor to be in conduction for a variable part of the voltage supply cycle.
The load power can be adjusted from zero to 100% as a function of analog input signal, normally delivered by temperature controller or by potentiometer.
Phase Angle is used with inductive loads.

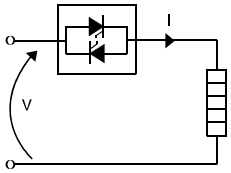
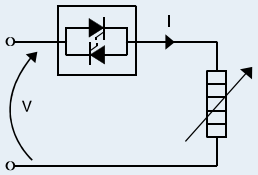
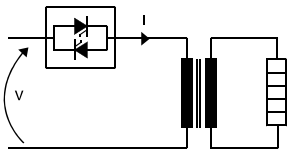
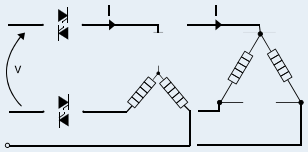
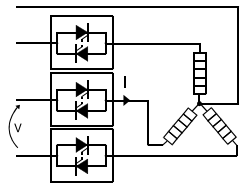
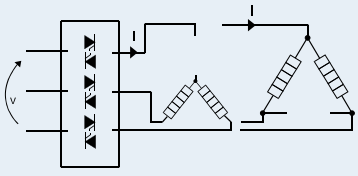
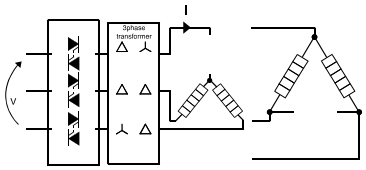
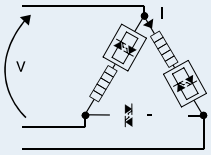


- Soft Start+Burst Firing S+BF

This is an additional feature to Burst Firing. The unit starts in Phase Angle mode with a ramp starting from zero up to full voltage in a presetted and adjustable time.
After which the rest of ON period will be at full conduction. Soft Start+Burst Firing is used to switch ON small inductive loads to avoid inrush surge current and to reduce at minimum



APPLICATION GUIDE

APPLICATION	LOAD TYPE	MODEL	CURRENT	N° of UNITS	CTRL. PHASES
	Normal Resistance Infrared medium and long waveform	CD3000S-1PH	700A	1	1
		MULTIDRIVE-1PH	1100÷2600A	1	1
		CD3000M-1PH	700A	1	1
		CD3200	700A	1	1
	Molibdenum, Tungstenum, Superkanthal, Platinum, Quartz lamp infrared short waveform	CD3200	700A	1	1
		MULTIDRIVE-1PH	1100÷2600A	1	1
	Silicon carbide elements	CD3000M-1PH	700A	1	1
		CD3200	700A	1	1
		MULTIDRIVE-1PH	1100÷2600A	1	1
	Transformers and inductances	CD3000M-1PH	700A	1	1
		CD3200	700A	1	1
		MULTIDRIVE-1PH	1100÷2600A	1	1
	Normal Resistance	CD3000S-2PH	700A	1	2
		CD3000M-2PH	700A	1	2
		MULTIDRIVE-2PH	1100÷2600A	1	2
	Normal Resistance	CD3000S-3PH	500A	1	3
		CD3000M-3PH	500A	1	3
		MULTIDRIVE-3PH	1100÷2600A	1	3
	Silicon carbide elements	CD3000E-3PH	500A	1	3
		MULTIDRIVE-3PH	1100÷2600A	1	3
	Molibdenum, Tungstenum, Superkanthal, Platinum, Quartz lamp infrared short waveform	CD3000E-3PH	500A	1	3
		MULTIDRIVE-3PH	1100÷2600A	1	3
	Three phase transformer	CD3000E-3PH	500A	1	3
		MULTIDRIVE-3PH	1100÷2600A	1	3
	Three phase normal load resistance with open delta connection	CD3000S-3PH	500A	1	3
		CD3000M-3PH	500A	1	3
		MULTIDRIVE-3PH	1100÷2600A	1	3

FEEDBACK MODE: VC = Voltage compensation - V = Voltage feedback - VxI = Power feedback.

SUGGESTED FIRING MODE FOR YOUR APPLICATION						OTHER FEATURES		SIZING		NOTE
ZC	SC	BF	S+BF	DT	PA	CL	FEEDBACK	V	I	
●								V	$\frac{P}{V}$	For general resistance applications with low variations in temperature and age. For low inertia loads use Single Cycle (SC) or Phase Angle (PA).
		●	●		●		V			
	●	●			●		VC			
					●		V			
					●	●	V	V	$\frac{P}{V}$	These resistances change with temperature but have low variations with age. Starting current with cold elements can be 16 times nominal current (superkanthal). Infrared lamp short waveform can reach 8 time nominal current.
					●	●	V			
		●						V	$\frac{P}{V}$	These resistances change value with temperature and age and value at the end of element life is 4 times the initial value. Constant power regulation is necessary. It's available an algorithm suited to drive in Single Cycle Silicon carbide elements.
					●		VxI			
					●		VxI			
				●			VC	V	$\frac{P}{Vcos\phi}$	Transformers and inductors have inrush current on start up. Phase Angle plus Soft Start and current limit are required. To switch ON-OFF the transformer can be used DT firing that automatically switches ON-OFF when current value is zero.
					●	●	V			
					●		V			
●								V	$\frac{P}{1.73V}$	CD3000M-2PH is suitable to control resistive loads with delta or star connection without neutral. With analog input use BF and with SSR input use ZC.
		●					VC			
		●					VC			
●								$\frac{V}{1.73}$	$\frac{P}{1.73V}$	Three phase load with star plus neutral connection must be controlled on the three phases.
		●					VC			
		●					VC			
					●		VxI	V	$\frac{P}{1.73V}$	On three phase silicon carbide elements VxI feedback is suggested to have a constant power control. This is necessary to compensate resistance change with temperature and age. Resistance value at the end of element life is 4 times the initial one. It's also necessary a voltage supply that is two times the nominal with new elements. It's also recommanded to use SIL Algorithm to use BF firing.
					●		VxI			
					●	●	V	V	$\frac{P}{1.73V}$	These resistances change with temperature but have low variations with age. Start up current with cold elements can be many times nominal current, thus is necessary to use Phase Angle +Current Limit (infrared short waveform).
					●	●	V			
					●	●	V	V	$\frac{P}{1.73Vcos\phi}$	Three phase Multidrive and CD30 are specially designed to drive three phase transformers coupled on secondary with normal or special resistive loads.
					●	●	V			
●								V	$\frac{P}{3V}$	Open delta can be driven by three phase unit. With analog input the units will be one Master and two Slaves.
		●					VC			
		●					VC			

PRODUCT RANGE

OVERVIEW

	UNIT TYPE	CD3000S-1PH		CD3000S-2PH		CD3000S-3PH		CD3000M-1PH		CD3000M-2PH	
LOAD TYPE	NOMINAL MAX VOLTAGE POWER SUPPLY	240*-480-600V		480-600V		480-600V		240*-480-600V		480-600V	
	CURRENT RANGE	15-700A		10-700A		15-700A		15-700A		15-700A	
	SINGLE PHASE	●						●			
	3 PHASE LOAD DELTA or STAR NO NEUTRAL			●						●	
	3 PHASE LOAD STAR WITH NEUTRAL					●					
	3 PHASE LOAD OPEN DELTA					●					
INPUT TYPE	SSR 0-30VDC	●		●		●		●		●	
	AC INPUT 110 or 230V	up to 110A O		up to 110A O		up to 90A O					
	4-20mA LOOP POWERED	≤110A O									
	4-20mA							●		●	
	0-10VDC							●			
	POTENTIOMETER (10k)							●		●	
	COMMUNICATION COMMAND							●		●	
FIRING	ZERO CROSSING	●		●		●		●		●	
	SINGLE CYCLE							●			
	BURST FIRING							●		●	
	SOFT START + BURST							●			
	PHASE ANGLE							●			
	DELAYED TRIGGERING							●			
	UNIVERSAL FIRING							●		●	
FEED BACK	VOLTAGE DROP COMPENSATION							●		●	
	VOLTAGE or CURRENT FEEDBACK (V or I)										
	POWER FEED BACK (V x I)										
OPTION	INTERNAL CURRENT LIMIT										
	EXTERNAL CURRENT LIMIT PROFILING										
	HEATER BREAK + SHORT CIRCUIT ON SCR	up to 110A O*		up to 100A O*		up to 90A O*		O		O	
	EXTERNAL FUSE AND FUSEHOLDER	≤110A		≤100A		≤90A		≤110A		≤100A	
	INTERNAL FUSES	>110A		>100A		>90A		>110A		>100A	
KOMM.	RS485 WITH MODBUS PROTOCOL							●		●	
	PROFIBUS + DEVICENET + CANBUS							TU-PB; TU-DN		TU-PB; TU-DN	
CONFIG.	CD-KEYPAD CONNECTIVITY							●		●	
	FRONTAL KEYPAD										
	PERSONAL COMPUTER PROGRAMMABLE							●		●	
	CURRENT (Amps)	SIZE	MARK	SIZE	MARK	SIZE	MARK	SIZE	MARK	SIZE	MARK
SIZES	2x10			S0	CE						
	15	S0	cUL/CE	S1	cUL/CE	S2	cUL/CE	S0C	cUL/CE	S1C	cUL/CE
	25	S0	cUL/CE	S1	cUL/CE			S0C	cUL/CE	S1C	cUL/CE
	30					S4	cUL/CE				
	35	S3	cUL/CE	S4	cUL/CE			S3C	cUL/CE	S4C	cUL/CE
	45	S3	cUL/CE	S7	cUL/CE	S6	cUL/CE	S3C	cUL/CE	S7C	cUL/CE
	60	S7	cUL/CE			S8	cUL/CE	S7C	cUL/CE		
	75			S8	cUL/CE	S8	cUL/CE			S8C	cUL/CE
	90	S7	cUL/CE			S8	cUL/CE	S7C	cUL/CE		
	100			S8	cUL/CE					S8C	cUL/CE
	110	S8	cUL/CE					S8C	cUL/CE		
	125	S9	cUL/CE	S9	cUL/CE	S11	cUL/CE	S9	cUL/CE	S9	cUL/CE
	150	S9	cUL/CE	S9	cUL/CE	S11	cUL/CE	S9	cUL/CE	S9	cUL/CE
	200	S9	cUL/CE	S10	cUL/CE			S9	cUL/CE	S10	cUL/CE
	225					S13	cUL/CE				
	275			S14	UL/CE					S14	cUL/CE
	300	S12	cUL[1]/CE			S14	cUL/CE	S12	cUL[1]/CE		
	350					S14	cUL[1]/CE				
	400	S12	cUL[1]/CE	S14	cUL[1]/CE	S14	cUL/CE	S12	cUL[1]/CE	S14	cUL[1]/CE
	450			S14	UL/CE	S14	cUL[1]/CE			S14	cUL/CE
	500	S12	cUL[1]/CE	S14	cUL[1]/CE	S14	cUL/CE	S12	cUL[1]/CE	S14	cUL[1]/CE
	600	S12	cUL[1]/CE	S14	cUL[1]/CE			S12	cUL[1]/CE	S14	cUL[1]/CE
	700	S12	UL/CE	S14	UL/CE			S12	cUL/CE	S14	cUL/CE
	1100										
	1600										
	2100										
	2600										

NOTES: * no cUL Mark Note: [1] strengthened ventilation system in cUL version • = Standard O = option

CD3000M-3PH	CD3200	CD3000E-2PH	CD3000E-3PH	MULTIDRIVE-1PH	MULTIDRIVE-2PH	MULTIDRIVE-3PH
480-600V	480-600V	480V	480-600V	480-600V	480-600V	480-600V
15-500A	15-500 A	25-700A	25-500A	1100-2600A	25-2600A	25-2600A
	●			●		
		●			●	
●			●			●
●			●			●
●						
●	●	●	●	●	●	●
●	●	●	●	●	●	●
●	●	●	●	●	●	●
●	●	●	●	●	●	●
●		●	●	●	●	●
			●	●		●
●			●	●	●	●
			●	●		●
	●		●	●		●
		●		●	●	
●	●	●	●	●	●	●
	●		●	●		●
	●		●	●		●
	●	●	●	●	●	●
	●		●	●		●
	●		●	●		●
O	O	O	O	O	O	O
≤90A	≤110A					
>90A	>110A	●	●	●	●	●
●	●	●	●	●	●	●
TU-PB; TU-DN	TU-PB; TU-DN	TU-PB; TU-DN	TU-PB; TU-DN	TU-PB; TU-DN	TU-PB; TU-DN	TU-PB; TU-DN
●	●	●	●	●	●	●
				●	●	●
●	●	●	●	●	●	●

SIZE	MARK	SIZE	MARK	SIZE	MARK	SIZE	MARK	SIZE	MARK	SIZE	MARK	SIZE	MARK
S2C	cUL/CE	S0C	cUL/CE										
		S0C	cUL/CE	S9	cUL[1]/CE	S9	cUL[1]/CE			S13	UL/CE	S13	UL/CE
S4C	cUL/CE												
		S3C	cUL/CE	S9	cUL[1]/CE	S9	cUL[1]/CE						
S6C	cUL/CE	S3C	cUL/CE	S9	cUL[1]/CE	S9	cUL[1]/CE			S13	UL/CE	S13	UL/CE
S8C	cUL/CE	S7C	cUL/CE										
S8C	cUL/CE			S9	cUL/CE	S9	cUL/CE			S13	UL/CE	S13	UL/CE
S8C	cUL/CE	S7C	cUL/CE										
				S9	cUL/CE	S11	cUL/CE			S13	UL/CE	S13	UL/CE
		S8C	cUL/CE										
S11	cUL/CE	S9	cUL/CE	S9	cUL/CE	S11	cUL/CE			S13	UL/CE	S13	UL/CE
S11	cUL/CE	S9	cUL/CE	S9	cUL/CE	S11	cUL/CE			S13	UL/CE	S13	UL/CE
		S9	cUL/CE	S10	cUL/CE								
S13	cUL/CE					S13	cUL/CE			S13	UL/CE	S13	UL/CE
				S14	cUL/CE					S14	UL/CE		
S14	cUL/CE	S12	cUL[1]/CE			S14	cUL/CE					S14	UL/CE
S14	cUL[1]/CE					S14	cUL[1]/CE					S14	cUL[1]/CE
S14	cUL/CE	S12	cUL[1]/CE	S14	cUL[1]/CE	S14	cUL/CE			S14	cUL[1]/CE	S14	UL/CE
S14	cUL[1]/CE			S14	cUL/CE	S14	cUL[1]/CE			S14	UL/CE	S14	cUL[1]/CE
S14	cUL/CE	S12	cUL[1]/CE	S14	cUL[1]/CE	S14	cUL/CE			S14	cUL[1]/CE	S14	UL/CE
		S12	cUL[1]/CE	S14	cUL[1]/CE					S14	cUL[1]/CE		
		S12	cUL/CE	S14	cUL/CE					S14	UL/CE		
								S15	CE	S16	CE	S17	CE
								S15	CE	S16	CE	S17	CE
								S15	CE	S16	CE	S17	CE
								S15	CE	S16	CE	S17	CE

SIZES AND DIMENSIONS

SIZE	S0	S1	S2	S3	S4	
Width	30	60	92	52	117	
Height	120	120	145	120	120	
Depth	120	120	120	120	123	

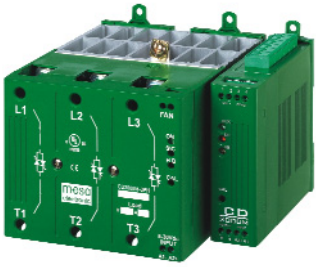
SIZE	S0C	S1C	S2C	S3C	S4C	
Width	63	95	123	85	148	
Height	120	120	145	120	120	
Depth	120	120	120	120	123	

SIZE	S11	S12	S13	S14	
Width	137	137	262	262	
Height	440	520	440	520	
Depth	270	270	270	270	





	S5	S6	S7	S8	S9
	117	117	117	117	116
	150	138	120	138	316
	123 (159)	123	159	159	187

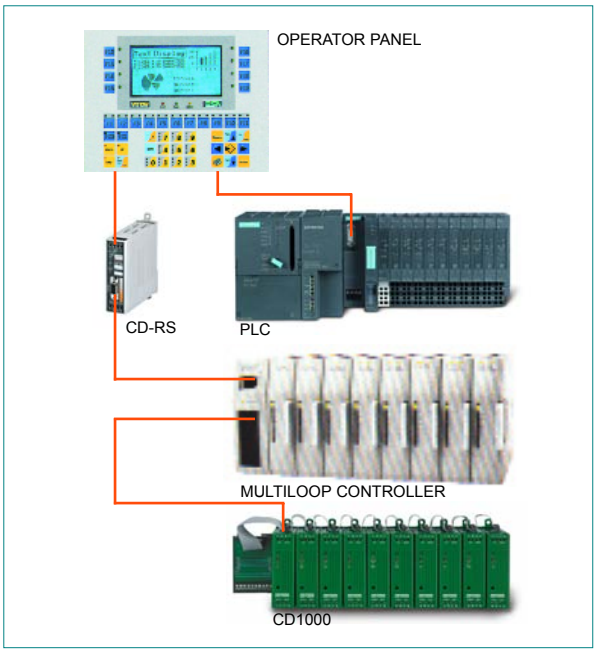
	S6C	S7C	S8C	S10C
	148	148	148	116
	138	120	138	350
	123	159	159	220

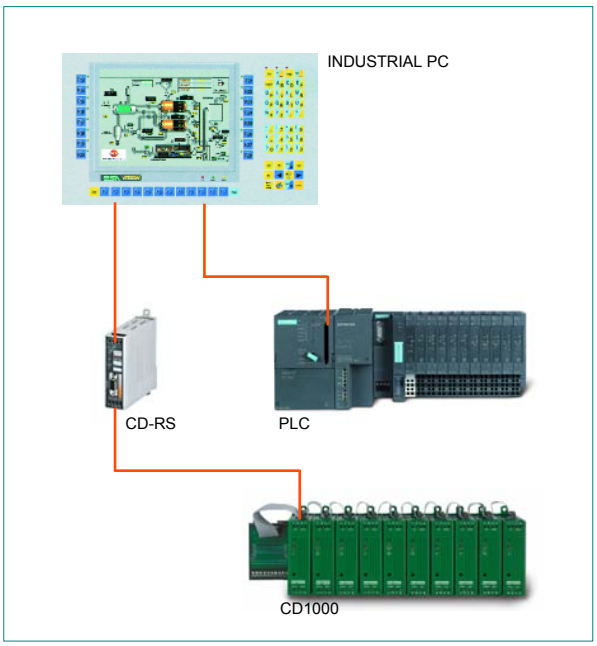


	S15	S16	S17
	300	600	900
	920	920	920
	410	410	410

INDUSTRIAL THYRISTOR PACKAGE

CD1000 Thyristor Unit





Mesa Thyristor units can be divided in two categories.
General purpose Thyristor units suitable to be used in all processes and “industrial package”, like CD1000, dedicated to a specific process. CD1000 is normally used where there are many zones: coextrusion, blow moulding and thermoforming machineries.
Target and typical architecture are represented in this page.

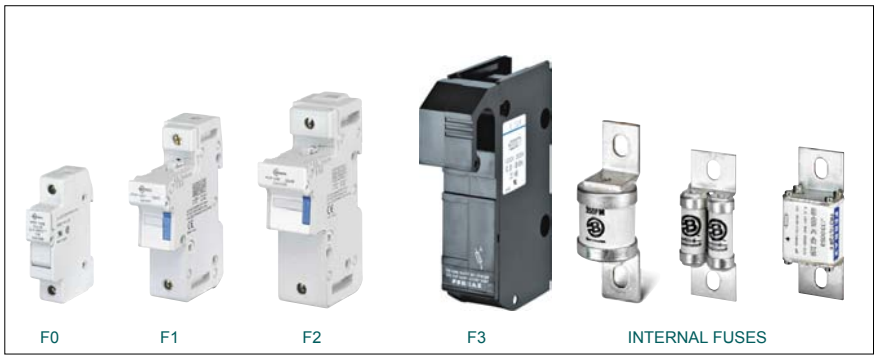
- Dramatic reduction of wiring. The connection between HMI and Thyristor Units is done via RS485 comm..
- Wiring between Thyristor Units is done with flat cables and connectors to avoid to make traditional wiring for auxiliary voltage supply, RS485 comm. and HB alarm. Customer has to wire only input/output power cables.
- All commands and informations are available on RS485 like load status and current value. It’s also possible to set the power output of Thyristor unit using analog input or digital command on comm. port.

Specification

- CD1000 is a digital and universal Thyristor unit configurable via serial communication port for different types of input and firing modes.
- RS485 communication and HB alarm are standard features. Current transformer is included in 3.5A model, for other models is mounted outside.
- Universal input and firing are customer configurable via serial port. Single Cycle, Burst Firing and Phase Angle can be configured adding also Soft Start facility. The change from one to the other firing can be done via serial port with CD1000 in ON condition.
- Current rating: 3.5 - 15 - 25 - 35 - 45 - 60 - 90 - 110A

FUSES AND FUSEHOLDERS

High speed fuses for semi-conductor protection.



SIZE	F0	F1	F2	F3
Width	17	26	35	37
Height	80	110	125	150
Depth	60	77	77	107

Fuses for all markets no-UL

Fuse & Fuseholder Selection TAB — Models		CD1000 CD3000S CD3000M CD3200		CD3000S-2PH CD3000M-2PH		CD3000S-3PH CD3000M-3PH		CD3000E		MULTIDRIVE	
								CD3000E-2PH	CD3000E-3PH	MULTIDRIVE-2PH	MULTIDRIVE-3PH
		(1 off)	(each phase)	(3 off)	(each phase)	(3 off)	(each phase)	(each phase)	(each phase)	(each phase)	(each phase)
Current	Size	Fuse+Fuseholder	Spare fuses	Fuse+Fuseholder	Spare fuses	Fuse+Fuseholder	Spare fuses	Spare fuses	Spare fuses	Spare fuses	Spare fuses
3,5A	F0	FFH1038/8A	FU1038/8A								
2X10A	F0	FFH1038/16A	FU1038/16A	FFH1038/16A	FU1038/16A						
15A	F0	FFH1038/16A	FU1038/16A	FFH1038/16A	FU1038/16A	FFH1038/16A	FU1038/16A				
25A	F0	FFH1038/32A	FU1038/32A	FFH1038/32A	FU1038/32A			FU50FE	FU50FE	FU50FE	FU50FE
30A	F1					FFH1451/40A	FU1451/40A				
35A	F1	FFH1451/40A	FU1451/40A	FFH1451/40A	FU1451/40A			FU63FE	FU63FE		
45A	F1	FFH1451/50A	FU1451/50A	FFH1451/63A	FU1451/63A	FFH1451/50A	FU1451/50A	FU80FE	FU80FE	FU80FE	FU80FE
60A	F2	FFH2258/80A	FU2258/80A			FFH2258/80A	FU2258/80A				
75A	F2			FFH2258/100A	FU2258/100A	FFH2258/100A	FU2258/100A	FU100FE	FU100FE	FU100FE	FU100FE
90A	F2	FFH2258/125A	FU2258/125A			FFH2258/125A	FU2258/125A				
100A	F2			FFH2258/125A	FU2258/125A			FU160FEE	FU2X80FE	FU160FE	FU160FE
110A	F3	FFHPSI27/160A	FU2760/160A								
125A	IF	IF	FU200FEE	IF	FU200FEE	IF	FU2X100FE	FU200FEE	FU2x100FE	FU200FEE	FU200FE
150A	IF	IF	FUURB250 or FU200FEE	IF	FUURB250 or FU200FEE	IF	FU2X100FE	FUURB250 or FU200FEE	FU2x100FE	FUURB250 or FU200FEE	FUURB250 or FU200FEE
200A	IF	IF	FUURB315	IF	FUURB315			FUURB315			
225A	IF					IF	FUURB315 or 2xFEE160		FUURB315 or 2xFEE160	FUURB315 or 2xFEE160	FUURB315 or 2xFEE160
275A	IF			IF	FUURB315 or 2xFEE160			FUURB315 or 2xFEE160		FUURB315 or 2xFEE160	
300A	IF	IF	FU350FM			IF	FU450FMM		FU450FMM		FU450FMM
350A	IF					IF	FU550FMM		FU550FMM		FU550FMM
400A	IF	IF	FU550FMM	IF	FU550FMM	IF	FU550FMM	FU550FMM	FU550FMM	FU550FMM	FU550FMM
450A	IF			IF	2xFU315FM	IF	2xFU315FM or FU700FMM	2xFU315FM	2xFU315FM or FU700FMM	2xFU315FM	2xFU315FM or FU700FMM
500A	IF	IF	FU700FMM	IF	2xFU315FM	IF	2xFU315FM or FU700FMM	2xFU315FM	2xFU315FM or FU700FMM	2xFU315FM	2xFU315FM or FU700FMM
600A	IF	IF	2xFU450FMM	IF	2xFU450FMM			2xFU450FMM		2xFU450FMM	
700A	IF	IF	2xFU450FMM	IF	2xFU450FMM			2xFU450FMM		2xFU450FMM	

Fuses UL approved for USA and Canada

Fuse & Fuseholder Selection TAB — Models cULus approved		CD 1000 CD3000S CD3000M CD3200		CD3000S-2PH CD3000M-2PH		CD3000S-3PH CD3000M-3PH		CD3000E		MULTIDRIVE	
								CD3000E-2PH	CD3000E-3PH	MULTIDRIVE-2PH	MULTIDRIVE-3PH
		(1 off)	(each phase)	(3 off)	(each phase)	(3 off)	(each phase)	(each phase)	(each phase)	(each phase)	(each phase)
Current	Size	Fuse+Fuseholder	Spare fuses	Fuse+Fuseholder	Spare fuses	Fuse+Fuseholder	Spare fuses	Spare fuses	Spare fuses	Spare fuses	Spare fuses
3,5A	F0	FFH1038/8A-UL	FU1038/8A-UL								
2X10A	F0	FFH1038/16A-UL	FU1038/16A-UL	FFH1038/16A-UL	FU1038/16A-UL						
15A	F0	FFH1038/16A-UL	FU1038/16A-UL	FFH1038/16A-UL	FU1038/16A-UL	FFH1038/16A-UL	FU1038/16A-UL				
25A	F0	FFH1038/32A-UL	FU1038/32A-UL	FFH1038/32A-UL	FU1038/32A-UL			FU50FE	FU50FE	FU50FE	FU50FE
30A	F1					FFH1451/40A-UL	FU1451/40A-UL				
35A	F1	FFH1451/40A-UL	FU1451/40A-UL	FFH1451/40A-UL	FU1451/40A-UL			FU63FE	FU63FE		
45A	F1	FFH1451/50A-UL	FU1451/50A-UL	FFH1451/63A-UL	FU1451/63A-UL	FFH1451/50A-UL	FU1451/50A-UL	FU80FE	FU80FE	FU80FE	FU80FE
60A	F2	FFH2258/80A-UL	FU2258/80A-UL			FFH2258/80A-UL	FU2258/80A-UL				
75A	F3			FFHPSI27/100A-UL	FU2760/100A-UL	FFHPSI27/100A-UL	FU2760/100A-UL	FU100FE	FU100FE	FU100FE	FU100FE
90A	F3	FFHPSI27/125A-UL	FU2760/125A-UL			FFHPSI27/125A-UL	FU2760/125A-UL				
100A	F3			FFHPSI27/160A-UL	FU2760/160A-UL			FU160FEE	FU2x80FE	FU160FEE	FU160FEE
110A	F3	FFHPSI27/160A-UL	FU2760/160A-UL								
125A	IF	IF	FU200FEE	IF	FU200FEE	IF	FU2x100FE	FU200FEE	FU2x100FE	FU200FEE	FU200FEE
150A	IF	IF	FUURB250 or FU200FEE	IF	FUURB250 or FU200FEE	IF	FU2x100FE	FUURB250 or FU200FEE	FU2x100FE	FUURB250 or FU200FEE	FUURB250 or FU200FEE
200A	IF	IF	FUURB315	IF	FUURB315			FUURB315			
225A	IF					IF	FUURB315 or 2xFEE160		FUURB315 or 2xFEE160	FUURB315 or 2xFEE160	FUURB315 or 2xFEE160
275A	IF			IF	FUURB315 or 2xFEE160			FUURB315 or 2xFEE160		FUURB315 or 2xFEE160	
300A	IF	IF	FU350FM			IF	FU450FMM		FU450FMM		FU450FMM
350A	IF					IF	FU550FMM		FU550FMM		FU550FMM
400A	IF	IF	FU550FMM	IF	FU550FMM	IF	FU550FMM	FU550FMM	FU550FMM	FU550FMM	FU550FMM
450A	IF			IF	2xFU315FM	IF	2xFU315FM or FU700FMM	2xFU315FM	2xFU315FM or FU700FMM	2xFU315FM	2xFU315FM or FU700FMM
500A	IF	IF	FU700FMM	IF	2xFU315FM	IF	2xFU315FM or FU700FMM	2xFU315FM	2xFU315FM or FU700FMM	2xFU315FM	2xFU315FM or FU700FMM
600A	IF	IF	2xFU450FMM	IF	2xFU450FMM			2xFU450FMM		2xFU450FMM	
700A	IF	IF	2xFU450FMM	IF	2xFU450FMM			2xFU450FMM		2xFU450FMM	

NOTES: IF = internal fuses, FFH = external fuse+fuseholder.

In accordance with our policy of continuous improvement, CD Automation reserves the right to change specifications from those shown in this document.

PRODUCT CATALOG

REVO S FAMILY from 3,5 to 800A

- The family is available in 1-2-3 phase Units
- Nominal voltage 480-600-690V
- Input: SSR or analog Inputs
- Firing: burst firing (fast zero crossing)
- Heater Break: Alarm to diagnostic partial or total load failure and thyristor short circuit
- Its features are able to satisfy the simple application where the communication is not required
- Fuse and fuse holder up to 40A
- Fixed fuses from 60 to 800A
- Internal fuses reduce your labor and dimension of cabinet
- 100 KA short circuit current (SCCR) tested
- CE and cUL approved see pages 12-13

REVO C CONNECT a real universal unit from 30 to 800A

- REVO C is a communicating family with following main features
- Capability to drive 1 phase or 3 phase loads using 1-2 or 3 leg
- Nominal voltage 480-600-690V
- 100 KA short circuit current (SCCR) tested
- Fuse and fuse holder up to 40A
- Fixed fuses from 60 to 800A
- Internal fuses reduce your labor and dimension of cabinet
- All the most popular FieldBus mounted on internal unit board
- All input signal selectable via PC or OLED display
- All Firing types selectable with capability to switch from one firing to another one while the unit is controlling power to the load
- All Control Mode / Feed Back selectable while the unit is working
- CE and cUL approved see pages 12-13

REVEX FAMILY from 30 to 280A

REVEX has been designed with these targets:

- Price positioning between REVO S and REVO C
- High performance with precision features equal or less than 1%
- Very high flexibility able to guarantee the migration from obsolete to New products with compatibility in term of dimension and wiring and with better performances

REVEX is a real univeral unit where you can select:

- Input signal in digital mode
- Firing mode: Single cycle, half cycle, burst, phase angle, delayed triggering, different types of adjustable ramp
- Control Mode (V, V_2, I, I_2, VxL)
- Communication RS485 with Modbus® protocol standard
- Two Analog input
- Two Digital input
- USB port to program REVEX, should you ever need to re-program from your ordered configuration
- With the units already programmed you can simply switch and go on
- Save money and time straight out the box without the need to read a long manual
- Save money with REVEX and only pay for functionality you need

REVO C EXTENDED from 1100 to 2100A

- REVO C Extended is an extension of REVO C
- The circuit board and its features are exactly the same of REVO C (see description on left side)
- The board is fisically different and suitable to be mounted on the right side with plug in connection
- Key pad with OLED display is mounted and on it where is possible
  to see power, current and voltage
  to set and to read all parameters
  to read alarms and messages in different languages
- The firing are the same of smaller units from 30 to 800A but some of them are skipped and not suggested by MESA because dangerous with high current ex 2100A
  We don't suggest to use very fast firing like half cycle or single firing because can create problems for noise and electromechanical efforts on cables and copper bars
- Nominal voltage 480-600-690V 50 or 60 Hz
- Auxiliary voltage 90-265V with 20 VA power consumption
- Two thermal alarm are available on each phase. These sensors are positioned on heat sink and can be activated by overcurrent or overtemperature inside the cabinet.
  Thermal switch 1 just with warning with message on OLED display.
  tThermal switch 2 Stop and alarm of the unit.
- Very generous ventilation has been provided with two fans for each phase
- For other features and coding see pag 12 of REVO catalog

MULTICHANNEL THYRISTOR UNIT

MESA has a wide product range able to cover application from 30 to 2100A.

We cover also small amperage from 3,5 to 25A.

This is because there are applications with high number of zones like:

• Thermoforming for plastic

• Thermoforming for glass

• Infrared short waveform

Where is necessary to reduce wiring labor and space of the cabinet.

In addition our multichannel Units can operate with power control optimization, where the pick power is closed to average power value and power factor is close to 1 (in this mode you save money on your energy bill).

The dimensions are very small.

The communication from PLC or multiloop is done from PLC central processing unit directly to the REVO PN input. This avoid to use all PLC output modules.

REVO PN multichannel thyristor units

Designed specifically for industrial multi-zone applications, REVO PN can be configured to control between 4 and 24 channels/zones. Typically each zone is sized for 25A but by using the front panel connector, loads of up to 210A can be connected. Important power control functionality is offered by REVO PN including:

- Elimination of power overshoot
- Power factor maintained close to 1
- Keeps your instantaneous power within the limits of your electricity supply contract
- Stay connected with the most popular Field Bus protocols
- Eliminate use of PLC output modules by using comms for power to CPU connections
- Alarm notification per zone of heater break and thyristor short circuit
- Product footprint for 24 zone package 60% less than using standard thyristor stacks
- Dramatic savings with less wiring & smaller cabinet enclosures
- REVO PN's considered design not only helps you save start-up costs but ensures you keep on saving money throughout the products lifetime.
- This solution includes electronic circuit control and up to 24 thyristor mounted inside.

REVO PC power controller

- Multi channel power control
- Suitable to communicate with PLC & Multiloop
- Dedicated to solve applications
- Space & wiring reduction
- Most popular Field Bus available
- CE EMC and cUL® listed
- Elimination of power overshoot
- Power factor maintained close to 1
- Power control optimization
- When loads are very small from 3,5 to 7A
- REVO-PC can be connected with REVO-SX below

REVO SX specification

- This unit is available in three version as in drawing below
- Each unit includes Fuse and Fuse holder, thyristor and heat sink with its own firing circuit
- Zero crossing firing
- Insulated input
- LED for on off status indication
- LED fr fuse failure indication
- Plug in connection for auxiliary and power terminations
- Small dimensions: Width 36 mm, depth 86 mm, height 121 mm
- Din rail mounting or screw mounting
- REVO SX can be used in applications with many zones and low power as thermoforming, blow moulding and hot runners

Diagram of control connection 4x3,5A

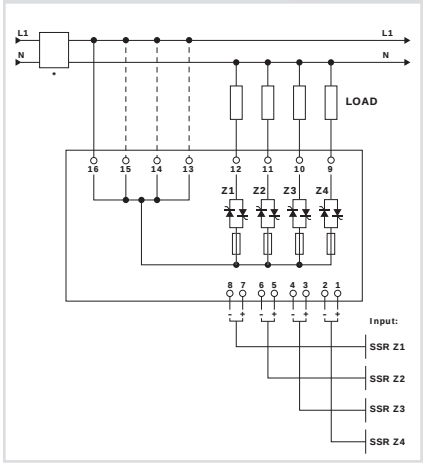


Diagram of control connection 3x4,5A

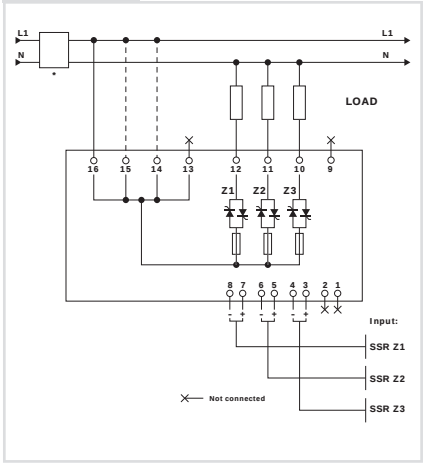
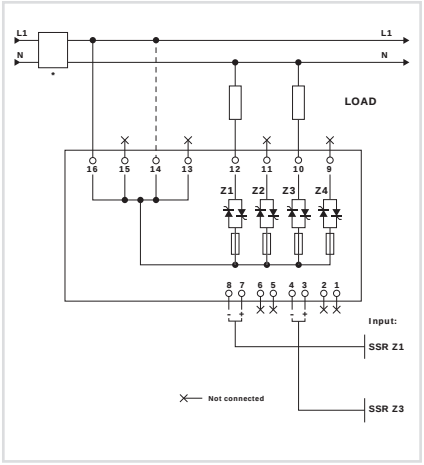


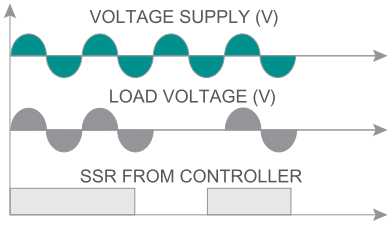
Diagram of control connection 2x7A



GLOSSARY

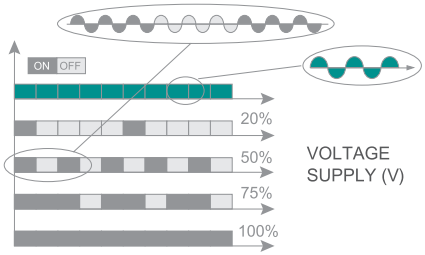
ZERO CROSSING ZC

ZC firing mode is used with the logic output from a temperature controller and so the thyristor operates like a contactor.
The cycle time is performed by the temperature controller.
Zero crossing minimizes interferences as the thyristor unit switches ON-OFF at zero voltage.



BURST FIRING BF

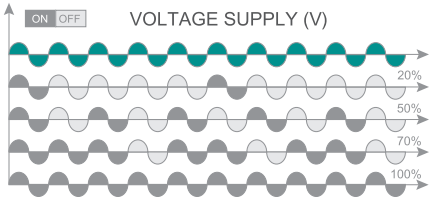
This firing is performed digitally within the thyristor unit at zero volts, producing no EMC interferences. Analogue input is necessary for BF and the number of complete cycles must be specified far 50% power demand. This value can be between 1 and 255 complete cycles, determining the speed of firing. When 1 is specified, the firing mode becomes Single Cycle (SC).



Soft Start + Burst Firing now availabe as an option at 1 PH and 3 PH.

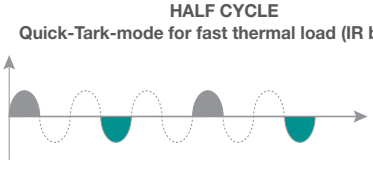
SINGLE CYCLE SC

SC is the fastest zero crossing switching method. At 50% input signal, one cycle is ON and one cycle is OFF. At 75%, 3 cycles are ON and one cycle is OFF. If power demand is 76% the unit performs the same as for 75% but every time the unit switches ON the microprocessor divides 76/75 and memorises the ratio. When the sum is one the unit delivers one cycle more to the load. With this firing it is necessary to have analogue input.



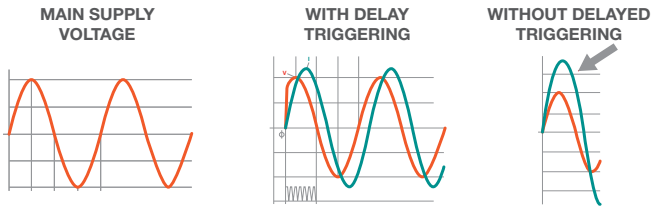
HALF CYCLE

This is a super fast firing used with short infrared elements to avoid flickering and harmonic generated by phase angle firing.



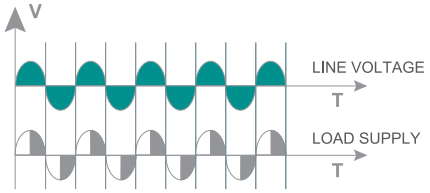
DELAYED TRIGGERING DT

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 preset delay for the first half cycle.



PHASE ANGLE PA

PA controls the power to the load by allowing the thyristor to conduct for part of the AC supply cycle only. The more power required, the more the conduction angle is advanced until virtually the whole cycle is conducting for 100% power. The load power can be adjusted from 0 to 100% as a function of the analogue input signal, normally determined by a temperature controller or potentiometer, PA is normally used with inductive loads.

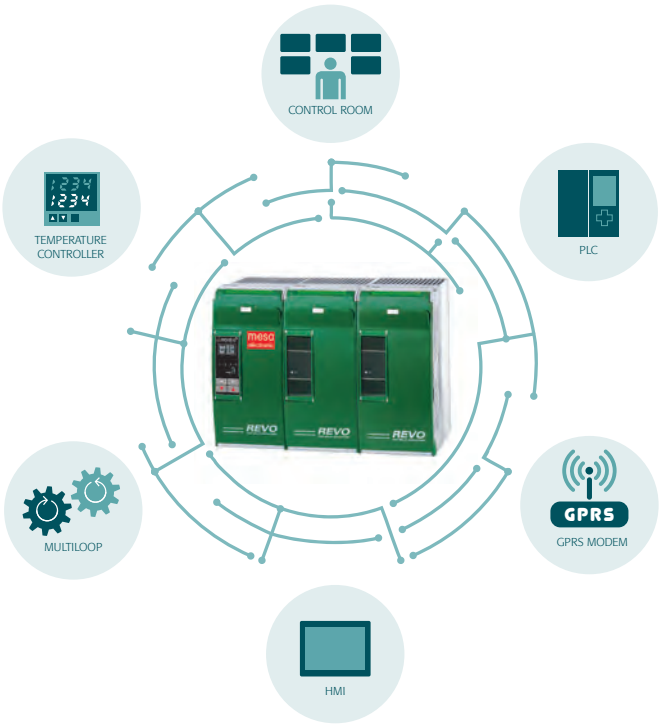


FEEDBACK/CONTROL MODE

Supply voltage fluctuations changes the power to the load.
To overcome this effect the voltage supplied to the load is measured and compared with the power demand from the controller.
The error signal is used to automatically hold the power at the value requested.

Three types of control mode are available:
Voltage control mode, where the input signal is proportional to the voltage output (voltage f/b).
Current control mode, where the input signal is proportional to the current output (current f/b).
Power control mode, where the input signal is proportional to the power output (power f/b).
As an option it is possible to transfer control mode from voltage to power via a simple digital command.

CONNECTIVITY AND CONFIGURATION



READ	WRITE
Set Point	Set Point
Alarm	Configuration Parameters
Voltage	
Power	
Current	
Heater Break Alarm	
SCR Short Circuit Alarm	

HOW TO USE THE GENERAL CATALOG

Page 3-6
See different families of power thyristor controllers. Click on the link below the images to download the Catalog

Page 9
See relative price between the different families

Page 10-11
Select your drawing from "Application Guide"

Page 10-11
Select "Load Type" and find your model

Page 10-11
"Sizing" column calculation of load currents (see formulas)

Page 12-13
Select your model to view the main product features

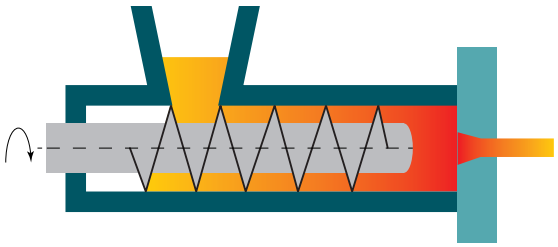
Page 12-13
Cross reference the model and amps to see the package size

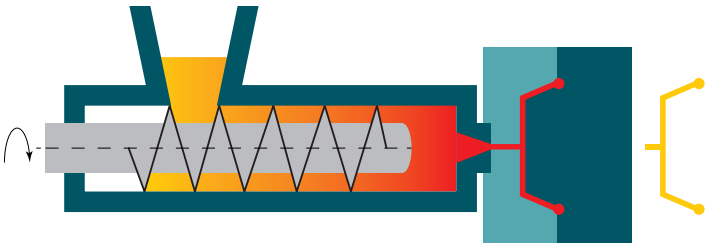
Page 14-15
See appearance & dimensions of your choice

SELLING PRICE VS FEATURES

APPLICATIONS

PLASTIC:	Extrusion, Injection Molding, Vulcanization, Forming
GLASS:	Feeder, Windscreen Bombing, Float Plant
SEMICONDUCTOR:	Crystal Pulling, Spreading Furnaces
AUTOMOTIVE:	Paint Drying, Polymerization
HEAT TREATMENT:	Sintering, Vacuum Furnaces
MATERIAL TEST:	Climatic Chamber, Shock Chambers
LIFE SCIENCES:	Sterilization, Laboratory Furnaces
FOOD & BEVERAGE:	Sterilization, Cooking, Drying System





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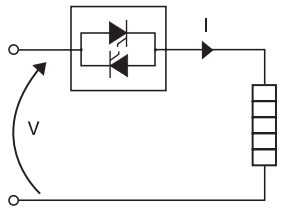
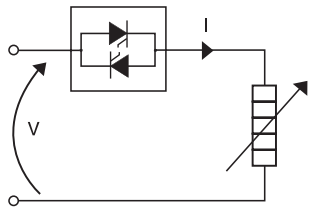
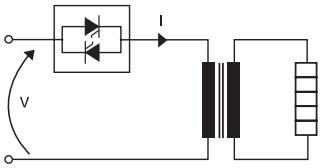
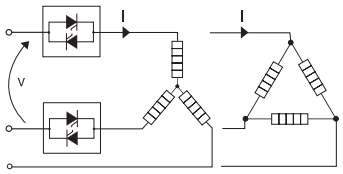
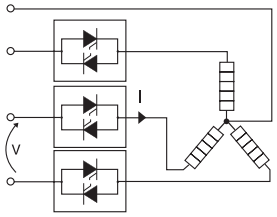
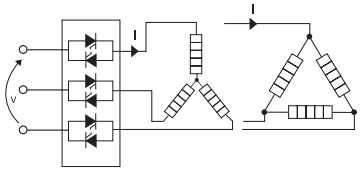
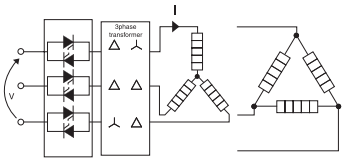
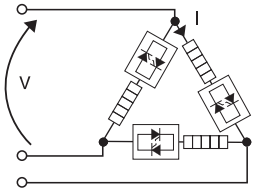
APPLICATION GUIDE FOR THYRISTOR UNIT SELECTION

APPLICATION GUIDE	LOAD TYPE	MODEL	CURRENT RANGE	N. OF UNITS	PHASE CTRL
	Normal resistance infrared medium and long waveform	REVO SSR	It depends on heat sink	1	1
		REVO S 1PH	30-800A	1	1
		REVO C 1PH	30-2100A	1	1
	Quartz lamp infrared short waveform	REVO C 1PH	30-2100A	1	1
	Molibdenum, Tungstenum, Kanthal® super, Platinum	REVO C 1PH	30-2100A	1	1
	Silicon carbide elements	REVO S 1PH	30-800A	1	1
		REVO C 1PH	30-2100A	1	1
	Transformers coupled with normal resistance	REVO C 1PH	30-2100A	1	1
	Transformers coupled with cold resistances (Kanthal® super)	REVO C 1PH	30-2100A	1	1
	Normal Resistance	REVO S 2PH	30-800A	1	2
		REVO C 2PH	30-2100A	1	2
	Normal Resistance	REVO S 3PH	30-500A	1	3
		REVO C 3PH	30-2100A	1	3
	Silicon carbide elements	REVO C 3PH	60-2100A	1	3
	Molibdenum, Tungstenum, Kantal® Super, Platinum, Quartz lamp infrared short waveform	REVO C 3PH	60-2100A	1	3
	Three phase transformer	REVO C 3PH	60-2100A	1	3
	Three phase normal load resistance with open delta connection	REVO S 3PH	30-800A	1	3
		REVO C 1PH	30-2100A	3	3
	Cold resistance	REVO C 1PH	30-2100A	3	3

CONTROL MODE: V = Voltage feedback V^2 = Square voltage feedback

SUGGESTED FIRING MODE FOR YOUR APPLICATIONS						OTHER FEATURES				SIZING		NOTE
ZC	HC	SC	BF	BF Simplified	S+BF	DT	PA	CL	Control	V	I	
●										V	$\frac{P}{V}$	For general resistance applications with low variations in temperature and age. For low inertia loads use Single Cycle (SC) or Phase Angle (PA). For Infrared Short it's also available Half Cycle that is a very Fast Firing
●				●								
●				●								
	●	●					●		V^2			
							●	●	I^2	V	$\frac{P}{V}$	These resistances change with temperature but have low variations with age. Starting current with cold elements can be 16 times nominal current (Kanthal® super). Infrared lamp short waveform can reach 8 time nominal current.
			●						V to Vxl	V	$\frac{P}{V}$	These resistances change value with temperature and age and value at the end of element life is 4 times the initial value. Constant power regulation is necessary with V to Vxl Transfer.
							●					
						●			Vxl	V	$\frac{P}{Vcos\phi}$	Transformers and inductors have inrush current on start up. Phase Angle plus Soft Start and current limit are required. To switch the transformer ON-OFF, use DT firing that will automatically switch ON-OFF when current value is at zero.
							●	●	I^2	V	$\frac{P}{Vcos\phi}$	Use Phase Angle + Current Limit
●				●						V	$\frac{P}{1.73V}$	Revo S - Revo C 2PH are suitable to control resistive loads with delta or star connection without neutral.
			●						Vxl	V	$\frac{P}{1.73V}$	
●				●						$\frac{V}{1.73}$	$\frac{P}{1.73V}$	Three phase load with star plus neutral connection must be controlled on the three phases.
			●						Vxl			
							●		V to Vxl	V	$\frac{P}{1.73V}$	On three phase silicon carbide elements Vxl feedback is suggested to have a constant power control. This is necessary to compensate resistance change with temperature and age. Resistance value at the end of element life is 4 times the original value. With Revo C use BF firing and Power Limit.
							●	●	I^2			These resistances change with temperature but have low variations with age. Start up current with cold elements can be many times the nominal current value. In this case it is necessary to use Phase Angle + Current Limit.
							●	●	I^2	V	$\frac{P}{1.73Vcos\phi}$	Three phase Revo C units are specially designed to drive three phase transformers coupled on secondary with normal or special resistive loads.
●				●						V	$\frac{P}{3V}$	Open delta can be driven by three phase unit.
							●	●	I^2			
							●	●	I^2	V	$\frac{P}{3V}$	

Vxl = Power feedback I = Current feedback Firing = BF Simplified 4-8-16 Cycles at 50% Power Demand with Analog Input only

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FEATURES COMPARISON

		BASIC PRODUCTS WITHOUT COMMUNICATION			UNIVERSAL
	DESCRIPTION	**REVO S 1PH**	**REVO S 2PH**	**REVO S 3PH**	**REVEX 1PH**
	CODE	**RS1**	**RS2**	**RS3**	**RX1**
MAIN VOLT.	Max voltage 480V	●	●	●	●
	Max voltage 600V	●	●	●	●
	Max voltage 690V **(1)**	●	●	●	
LOAD TYPE	Single phase	●			●
	3 phase load star no neutral or delta		●	●	
	3 phase load star with neutral			●	
	3 phase load open delta			●	
INPUT	SSR 4:30VDC	●	●	●	●
	4:20 mA	O	O	O	●
	0:10 Vdc	O	O	O	●
	Potentiometer	O	O	O	●
FIRING	Zero crossing	●	●	●	●
	Half Cycle				●
	Single Cycle				●
	Burst firing				●
	Burst firing semplified 4-8-16 Cycles at 50% **(2)**	●	●	●	●
	Delayed triggering				●
	Phase Angle				●
	Soft Start				
CONTROL MODE	No Feed Back	●	●	●	●
	Voltage				●
	Voltage Square				●
	Current				●
	Current Square				●
	Power Vxl				●
	Transfer from V to Vxl or I to Vxl				O
OPTION	Current limit				●
	Heater break Alarm HB	O	O	O	●
	Logging				
	Totalizer (Energy)				
TOOLS					
	PC Configurator Software (Line analizer Free of Charge)				●
COMM.					
	N°1 Modbus® RTU				●
	N°2 Modbus® RTU				O
	N°1 Profibus DP + N°1 Modbus® RTU				O
	N°1 Profinet® + N°1 Modbus® RTU				O
	N°1 Modbus® TCP + N°1 Modbus® RTU				O

CURRENT	**DESCRIPTION**	**REVO S 1PH**	**REVO S 2PH**	**REVO S 3PH**	**REVEX 1PH**
	SIZE / Approval	**SIZE / Approval**	**SIZE / Approval**	**SIZE / Approval**	**SIZE / Approval**
	30	SR3-SR6/CE-cUL	SR4-SR7/CE-cUL	SR5-SR8/CE-cUL	SR6/CE
	35	SR3-SR6/CE-cUL	SR4-SR7/CE-cUL	SR5-SR8/CE-cUL	SR6/CE
	40	SR3-SR6/CE-cUL	SR4-SR7/CE-cUL	SR5-SR8/CE-cUL	SR6/CE
	60	SR12/CE-cUL **(3)**	F/SR15/CE-cUL **(3)**	F/SR16/CE-cUL **(3)**	SR24/CE
	75		F/SR15/cUL	F/SR16/cUL	
	90	F/SR15/CE-cUL **(3)**	F/SR15/CE **(3)**	F/SR17/CE **(3)**	F/SR24/CE
	120	F/SR15/CE-cUL **(3)**	F/SR16/CE-cUL **(4)**	F/SR17/CE-cUL **(4)**	F/SR15/CE
	150	F/SR15/CE-cUL **(3)**	F/SR16/CE-cUL **(4)**	F/SR17/CE-cUL **(4)**	F/SR15/CE
	180	F/SR15/CE-cUL **(3)**	F/SR16/CE-cUL **(4)**	F/SR17/CE-cUL **(4)**	F/SR15/CE
	210	F/SR15/CE-cUL **(3)**	F/SR16/CE-cUL **(4)**	F/SR17/CE-cUL **(4)**	F/SR15/CE
	280	F/S10/CE	F/2xS10/CE		F/S10/CE
	300	F/S12/CE-cUL	F/S14/CE-cUL	F/S14/CE-cUL	
	350			F/S14/CE-cUL	
	400	F/S12/CE-cUL	F/S14/CE-cUL	F/S14/CE-cUL	
	450		F/S14/CE-cUL	F/S14/CE-cUL	
	500	F/S12/CE-cUL	F/S14/CE-cUL	F/S14/CE-cUL	
	600	F/S12/CE-cUL	F/S14/CE-cUL		
	700	F/S12/CE-cUL	F/S14/CE-cUL		
	800	F/S15/CE	F/S16/CE	F/S17/CE	
	1100				
	1400				
	1600				
	1800				
	2100				

● **STANDARD** O **OPTION** **SIZE** See next page **F** Fan Air Cooling; nothing before SIZE: Natural Air Cooling **(1)** cUL® Approval is for Voltage ≤ 600V

THYRISTOR UNITS FULLY CONFIGURATION WITH COMMUNICATION						
REVEX 2PH	**REVEX 3PH**	**REVO C 1PH**	**REVO C 2PH**	**REVO C 3PH**	**DESCRIPTION**	
RX2	**RX3**	**RC1**	**RC2**	**RC3**	**CODE**	
●		●	●	●	Max voltage 480V	MAIN VOLT.
●		●	●	●	Max voltage 600V	
		●	●	●	Max voltage 690V **(1)**	
		●			Single phase	LOAD TYPE
●	●		●	●	3 phase load star no neutral or delta	
	●			●	3 phase load star with neutral	
		● **(5)**			3 phase load open delta	
●	●	●	●	●	SSR 4:30VDC	INPUT
●	●	●	●	●	4:20 mA	
●	●	●	●	●	0:10 Vdc	
●	●	●	●	●	Potentiometer	
●	●	●	●	●	Zero crossing	FIRING
		●			Half Cycle	
		●			Single Cycle	
●	●	●	●	●	Burst firing	
●					Burst firing semplified 4-8-16 Cycles at 50% **(2)**	
		●		●	Delayed triggering	
		●		●	Phase Angle	
		●		●	Soft Start	
●	●	●	●	●	No Feed Back	CONTROL MODE
●	●	●	●	●	Voltage	
●	●	●	●	●	Voltage Square	
●	●	●	●	●	Current	
●	●	●	●	●	Current Square	
●	●	●	●	●	Power Vxl	
O	O	●	●	●	Transfer from V to Vxl or I to Vxl	
●		O		O	Current limit	OPTION
	O	O	O	O	Heater break Alarm HB	
		O	O	O	Logging	
		O	O	O	Totalizer (Energy)	
						TOOLS
●	●	●	●	●	PC Configurator Software (Line analizer Free of Charge)	
						COMM.
●	●	●	●	●	N°1 Modbus® RTU	
O	O	O	O	O	N°2 Modbus® RTU	
O	O	O	O	O	N°1 Profibus DP + N°1 Modbus® RTU	
O	O	O	O	O	N°1 Profinet® + N°1 Modbus® RTU	
O	O	O	O	O	N°1 Modbus® TCP + N°1 Modbus® RTU	
REVEX 2PH	**REVEX 3PH**	**REVO C 1PH**	**REVO C 2PH**	**REVO C 3PH**	**DESCRIPTION**	CURRENT
SIZE / Approval	**SIZE / Approval**	**SIZE / Approval**	**SIZE / Approval**	**SIZE / Approval**	**SIZE / Approval**	
SR9/CE	SR10/CE	SR9/CE	SR10/CE-cUL	SR11/CE-cUL	30	
SR9/CE	SR10/CE	SR9/CE-cUL	SR10/CE-cUL	SR11/CE-cUL	35	
SR9/CE	SR10/CE	SR9/CE-cUL	SR10/CE-cUL	SR11/CE-cUL	40	
SR25/CE	F/SR26/CE	SR12/CE-cUL **(3)**	SR13/CE-cUL **(3)**	SR14/CE-cUL **(3)**	60	
					75	
F/SR25/CE	F/SR26/CE	F/SR15/CE-cUL **(3)**	F/SR16/CE-cUL **(3)**	F/SR17/CE-cUL **(3)**	90	
F/SR16/CE	F/RS17/CE	F/SR15/CE-cUL **(3)**	F/SR16/CE-cUL **(4)**	F/SR17/CE-cUL **(4)**	120	
F/SR16/CE	F/RS17/CE	F/SR15/CE-cUL **(3)**	F/SR16/CE-cUL **(4)**	F/SR17/CE-cUL **(4)**	150	
F/SR16/CE	F/RS17/CE	F/SR15/CE-cUL **(3)**	F/SR16/CE-cUL **(4)**	F/SR17/CE-cUL **(4)**	180	
F/SR16/CE	F/RS17/CE	F/SR15/CE-cUL **(3)**	F/SR16/CE-cUL **(4)**	F/SR17/CE-cUL **(4)**	210	
F/2xS10/CE					280	
		F/S12/CE-cUL	F/S14/CE-cUL	F/S14/CE-cUL	300	
					350	
		F/S12/CE-cUL	F/S14/CE-cUL	F/S14/CE-cUL	400	
			F/S14/CE-cUL	F/S14/CE-cUL	450	
		F/S12/CE-cUL	F/S14/CE-cUL	F/S14/CE-cUL	500	
		F/S12/CE-cUL	F/S14/CE-cUL	F/S17/CE	600	
		F/S12/CE-cUL	F/S14/CE-cUL	F/S17/CE	700	
		F/S15/CE	F/S16/CE	F/S17/CE	800	
		F/SR18/CE	F/SR19/CE	F/SR20/CE	1100	
		F/SR21/CE	F/SR22/CE	F/SR23/CE	1400	
		F/SR21/CE	F/SR22/CE	F/SR23/CE	1600	
		F/SR21/CE	F/SR22/CE	F/SR23/CE	1800	
		F/SR21/CE	F/SR22/CE	F/SR23/CE	2100	

(2) It's possible just using Analog Input Ex. 4:20mA **(3)** SIZE 11 at 690V (no cUL®) **(4)** SIZE 13 at 690V (no cUL®) **(5)** Use n° 3 1PH units

SIZE AND DIMENSIONS

SR0 H 97 x W 36 x D 32 - 0,12kg.

SR1 H 97 x W 36 x D 92 - 0,29kg.

SR2 H 121 x W 36 x D 87 - 0,27kg.

SR3 H 121 x W 36 x D 125 - 0,44kg.

SR4 H 121 x W 72 x D 125 - 0,88kg.

SR5 H 121 x W 108 x D 125 - 1,32kg.

SR6 H 121 x W 36 x D 185 - 0,61kg.

SR7 H 121 x W 72 x D 185 - 1,22kg.

SR8 H 121 x W 108 x D 185 - 1,83kg.

SR9 H 121 x W 72 x D 185 - 1,15kg.

SR10 H 121 x W 108 x D 185 - 1,76kg.

SR11 H 121 x W 144 x D 185 - 2,4kg.

SR24 H 169 x W 116 x D 183 - 2,10 kg

SR25 H 180 x W 116 x D 183 - 2,35 kg

SR26 H 180 x W 167 x D 183 - 2,70 kg

SR12 H 269 x W 93 x D 170 - 3,4kg.
SR15 H 273 x W 93 x D 170 - 3,6kg.

SR13 H 269 x W 186 x D 170 - 6,8kg.
SR16 H 273 x W 186 x D 170 - 7,0kg.

SR14 H 269 x W 279 x D 170 - 10,2kg.
SR17 H 273 x W 279 x D 170 - 10,6kg.

S10 H 350 x W 120 x D 230 - 5,50 kg

2xS10 H 350 x W 240 x D 230 - 11,00 kg

S11 H 440 x W 137x D 270 - 10,5kg.

S12 H 520 x W 137 x D 270 - 15kg.

S13/S14 H 440/520 x W 262 x D 270 - 18/22kg.

S15 H 560 x W 137x D 270 - 10,5kg.

S16 H 560 x W 275 x D 270 - 21kg.

S17 H 560 x W 411 x D 270 - 31,5kg.

SR18 H 550 x W 329 x D 347 - 27kg.

SR19 H 550 x W 523 x D 347 - 49kg.

SR20 H 550 x W 717 x D 347 - 72kg.

SR21 H 640 x W 329 x D 347 - 32/40kg.

SR22 H 640 x W 523 x D 347 - 59/75kg.

SR23 H 640 x W 717 x D 347 - 86/110kg.

NOTES:

From SR9 to SR17 The thyristor unit are represented with OLED Display Std for REVO C family
The REVO S Family have a blind frontal unit.
OLED Digital Display is available to read Voltage, Current and Power HB alarm has been selected.
Sizes from 18 to 23 represented REVO C Extended Family; Standard version is without plastic IP2O that is available as an option.

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