

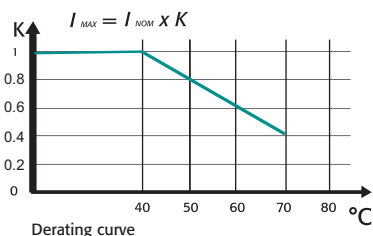
GENERAL DESCRIPTION



- Revo CL has been specifically designed to be an Universal Unit
- RS485 Comm. MODBUS Protocol Standard
- Frontal Key Pad to configure the unit and to read V,I and Power
- Configurability via RS485, USB Port and frontal Key Pad
- Microprocessor based electronic circuit fully isolated from power
- Universal input signal: RS485, Pot, Analog and SSR
- Soft Start + Phase Angle and Delayed Triggering Firing,
- Configurable Control Mode: V, I, V² and VxI
- Current Limit Std adjustable from front unit
- Profiling current limit via analog input
- Heater Break alarm to diagnose partial or total load failure and Thyristor Short circuit
- Digital input configurable
- Fixed Fuses Standard
- Current transformer integrated in Thyristor unit
- Comply with EMC, cUL pending
- IP20 Protection
- Panel mounting

TECHNICAL SPECIFICATION

Voltage power supply	From 24V to 480V Max (Std) or 600V option available on all size. 690V available from 400A to 700A		
Voltage Frequency	50 or 60 Hz no setting needed from 47 to 70 Hz		
Nominal Current	280A, 400A, 500A, 600A, 700A		
Input Signal	Voltage input	0:10Vdc	impedance 15 K ohm;
	Current input	0:20/4:20mA	impedance 100 Ohm;
Digital input	4:30V dc 5 mA Max (On > 4Vdc Off < 1Vdc)		
Firing	Soft Start + Phase Angle, Delay Triggering + Burst Firing,		
Control Mode	Voltage, Current, Square Voltage and Power selectable via frontal Key Pad, and RS485 or via Digital input to transfer from one control mode to another one to establish a control strategy.		
Auxiliary Voltage Supply	90:130Vac	8VA Max	
	170:265Vac	8VA Max	(Standard)
	230:345Vac	8VA Max	
	300:530Vac	8VA Max	(Standard)
	510:690Vac	8VA Max	
	600:760Vac	8VA Max	
Heater Break Alarm	HB alarm setting on front unit or RS485 with possibility to set sensitivity. Relay output 0,5A at 110V		
Mounting	Panel Mounting		
Operating Temperature	40 °C without derating. Over this temperature see below derating curve		
Storage temperature	-25 °C to 70 °C Max		
Altitude	Over 1000 m of altitude reduce the nominal current of 2% for each 100m		
Humidity	From 5 to 95% without condense and ice		



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 .

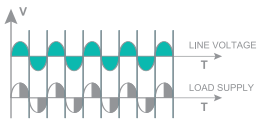
The Heater Break circuit is compensated for voltage fluctuation, in fact a voltage variation has no influence on resistance value because V/I ratio remain constant.

On this unit is possible to set the nominal resistance value and the alarm sensitivity.

HB alarm in addition diagnostic the thyristor in short circuit.

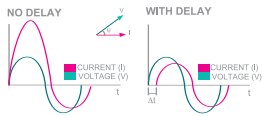
A normally open contact gives the alarm condition and an indication of the alarm type appears on display.

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.

DELAYED TRIGGERING DT



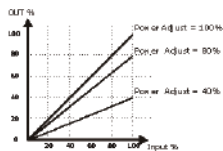
Used to switch the primary coil of transformers when coupled with normal resistive loads (not cold resistance) on the secondary, DT prevents the inrush current when zero voltage (ON-OFF) is used to switch the primary. The thyristor unit switches OFF when the load voltage is negative and switches ON only when positive with a pre-set delay for the first half cycle.

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" Bulletin

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.

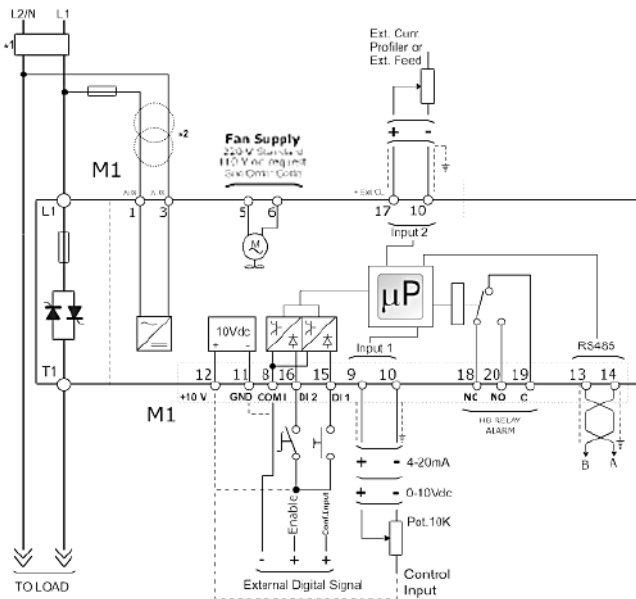
Imagine 3 zones with left and right one close to the door where in a continuous furnace the material come into and flow out. The profile of temperature along furnace is higher in central zone because there is less dispersion but if we scale its input we can have a flat profile.

APPLICATIONS AND FOCUS ON:

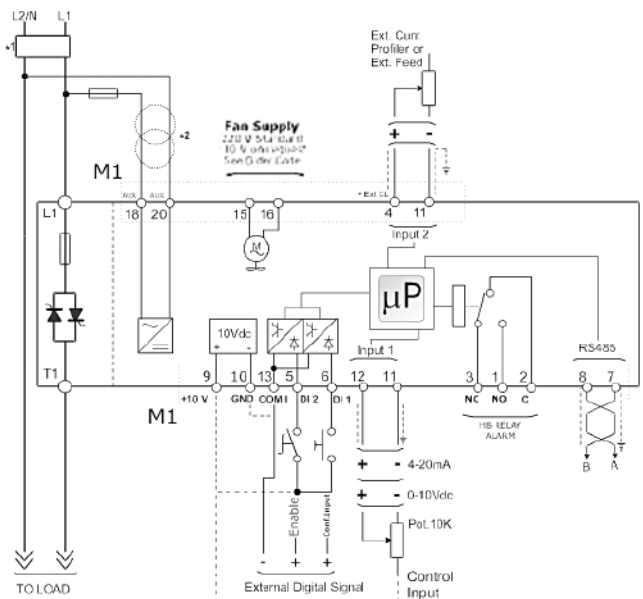
- Infrared lamp.
- Fournaces.
- Petrochemical
- Dryers
- Pharmaceutical
- Autoclaves.
- Chemical
- Extrusion line.
- Climatic chambers

WIRING CONNECTION REVO CL 1PH from 280A to 700A

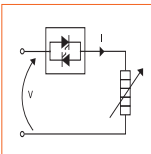
REVO CL 1PH 280A



REVO CL 1PH from 400 to 700A

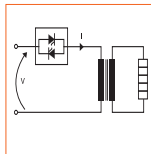


LOAD TYPE



Silicon carbide elements
Molibdenum,
Tungstenum,
kanthalSuper, Platinum
Infrared Lamps

LOAD TYPE



Transformers coupled
with normal resistance
(use DT Firing
Mode)

Transformers coupled
with cold resistances
kanthalSuper (use
Phase Angle + Current
Limit)

NOTE

- The user installation must be protecting by electromagnetic circuit breaker or by fuse isolator. The semiconductor I^2t should be 20% less than power controller I^2t . Semiconductor fuses are classified for UL as supplementer protection for semiconductor. They are note approved for branch circuit protection.
- The auxiliary voltage supply of the Revo unit must be synchronized with load voltage supply. If the Auxiliary Voltage (written on the identification label) is different from Supply Voltage (to the load), use an external transformer connected as above.

DIMENSION AND FIXING HOLES



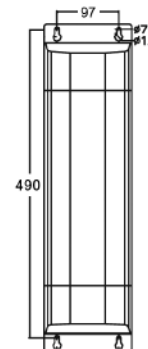
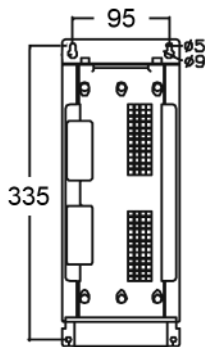
S9(H) W 120 mm. - H 350 mm. - D 230 mm. - kg. 5,5

280A



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

400A÷700A



OUTPUT FEATURES (POWER DEVICE)

Current A	Voltage range (V)	Ripetitive peak reverse voltage (480V) (600V)			Latching current (eff)	Max peak one cycle (10msec.)	Leakage current (mAeff)	I ² T value for fusing tp=10msec	Frequency range (Hz)	Power loss I=I _{nom} W)	Isolation Voltage Vac
280A	24+600V	1200	1600	1600	200	7000	15	236000	47+70	375	2500
400A	24+600V	1200	1600	1600	200	7800	15	300000	47+70	397	2500
500A	24+600V	1200	1600	1600	200	8000	15	306000	47+70	530	2500
600A	24+600V	1200	1600	1600	1000	17800	15	1027000	47+70	589	2500
700A	24+600V	1200	1600	1600	1000	17800	15	1027000	47+70	712	2500

FAN SPECIFICATION

Supply: 230V Standard

Input Power 17W

Supply: 115V Option

Input Power 14W

ORDERING CODES REVOS CL 1PH

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4, 5, 6 Current		8 Aux. Voltage supply		11 Control Mode		14 Approvals																																													
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LEGEND

CT = Current Transformer

HB = Heater Break Alarm

Note (1): After 16th digit write current and voltage of load inside brackets Ex. (400A-400V)

Note (2): Available on unit ≥400A

Note (5): Load voltage must be included in Selected Auxiliary Voltage Range

