

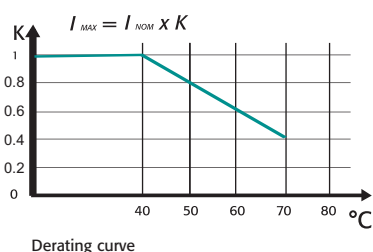
## GENERAL DESCRIPTION



- Revo M 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
- Firing Mode: Zero Crossing and Burst Firing Mode with programmable cycle time
- Configurable Control Mode: V and VxI
- Heater Break alarm to diagnose partial or total load failure and Thyristor Short circuit
- Digital input configurable
- Fixed Fuses Standard
- Current transformer integrated in the unit
- Comply with EMC, cUL pending
- IP20 Protection
- Panel mounting

## TECHNICAL SPECIFICATION

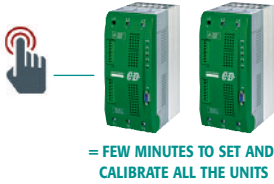
<b>Voltage power supply</b>	From 24V to 480V Max (Std) or 600V on request		
<b>Voltage Frequency</b>	50 or 60 Hz no setting needed from 47 to 70 Hz		
<b>Nominal Current</b>	60A, 90A, 120A, 150A, 180A, 210A		
<b>Input Signal</b>	SSR (logic)	4:30Vdc	5mA Max (On > 4Vdc Off ≤ 1Vdc);
	Voltage input	0:10Vdc	impedance 15 K ohm;
	Current input	0:20/4:20mA	impedance 100 Ohm;
<b>Digital input</b>	4:30V dc 5 mA Max (On > 4Vdc Off < 1Vdc)		
<b>Firing</b>	Burst Firing and Zero Crossing with possibility to set number of Burst and cycle time		
<b>Control Mode</b>	Voltage Current 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.		
<b>Auxiliary Voltage Supply</b>	90:130Vac	8VA Max	
	170:265Vac	8VA Max	(Standard)
	230:345Vac	8VA Max	
	300:530Vac	8VA Max	(Standard)
	510:690Vac	8VA Max	
<b>Heater Break Alarm</b>	HB alarm setting on front unit or RS485 with possibility to set sensitivity. Relay output 0,5A at 110V		
<b>Mounting</b>	Panel Mounting		
<b>Operating Temperature</b>	40 °C without derating. Over this temperature see below derating curve		
<b>Storage temperature</b>	-25 °C to 70 °C Max		
<b>Altitude</b>	Over 1000 m of altitude reduce the nominal current of 2% for each 100m		
<b>Humidity</b>	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  $V/I$ .

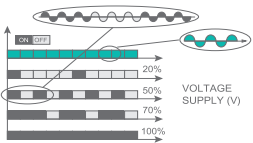
The Heater Break circuit is compensated for voltage fluctuation, in fact a voltage variation has no influence on resistance value because  $V/I$  ratio remain constant.

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.

### BURST FIRING BF



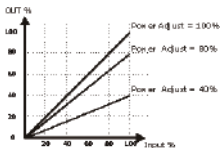
This firing is performed digitally within the thyristor unit at zero volts, producing no EMC interference. Analogue input is necessary for BF and the number of complete cycles must be specified for 50% power demand. This value can be between 1 and 255 complete cycles, determining the speed of firing.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

### 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



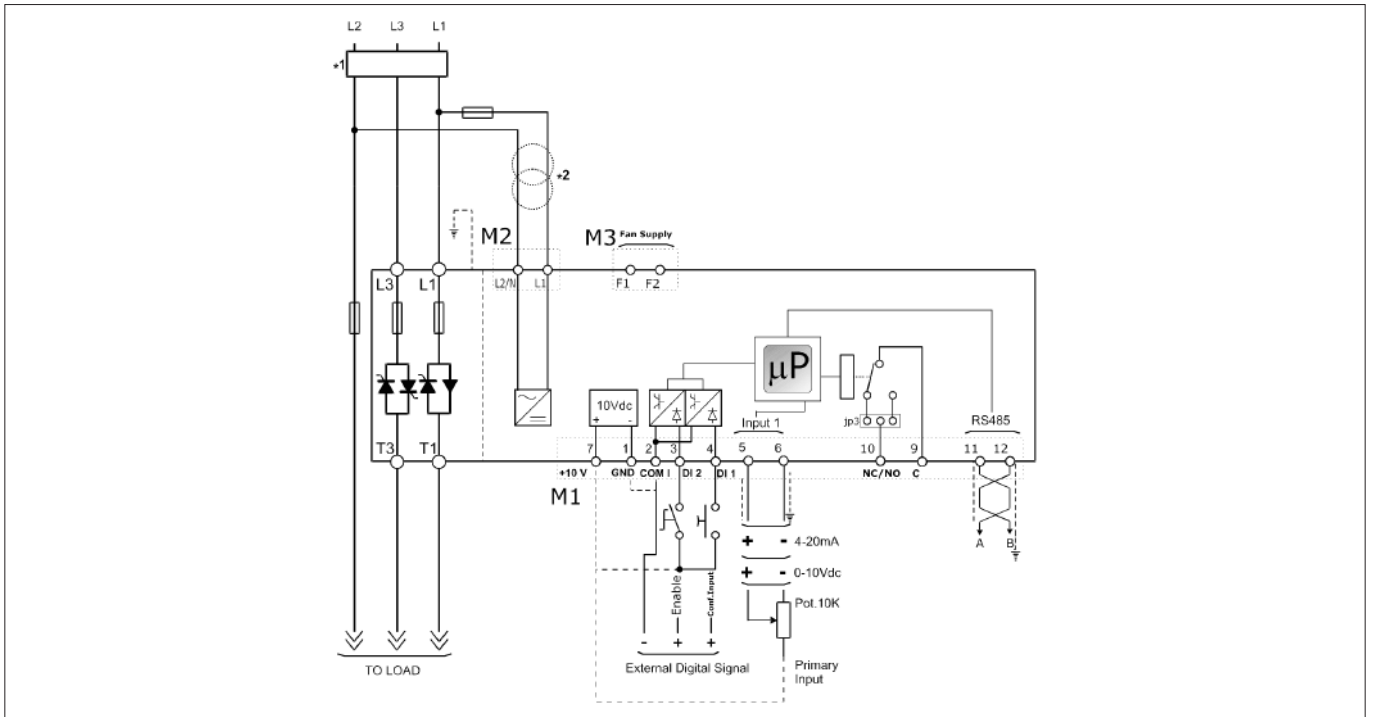
It's a scaling factor of the input command signal and limit the output of Thyristor unit. This parameter can be adjusted from 1 to 99% via RS485 or by the front of the unit. If this parameter is setted at 50% and the input signal is 100% the output become 50%. This feature is very useful to reduce the 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.

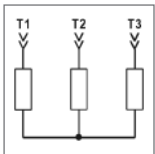
### APPLICATIONS AND FOCUS ON:

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

## WIRING CONNECTION M 2PH from 60A to 210A

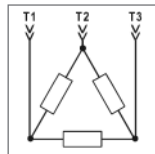


### LOAD TYPE



STAR without neutral  
Resistive or  
Infrared Lamps  
Long and  
medium waves

### LOAD TYPE

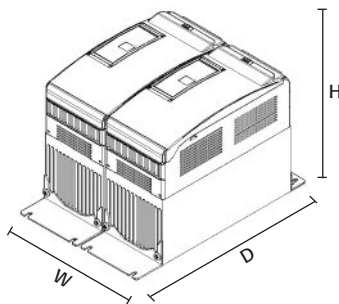


DELTA  
Resistive or  
Infrared Lamps  
Long and  
medium waves

### NOTE

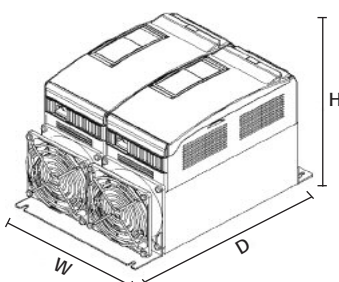
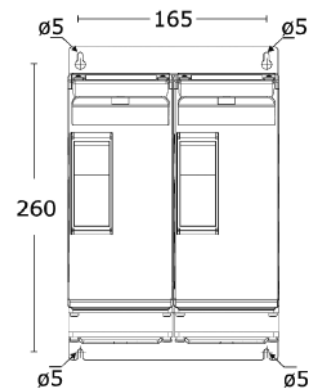
- (1) The user installation must be protecting by electromagnetic circuit breaker or by fuse isolator. The semiconductor I<sup>2</sup>t should be 20% less than power controller I<sup>2</sup>t. Semiconductor fuses are classified for UL as supplementer protection for semiconductor. They are note approved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

## DIMENSION AND FIXING HOLES



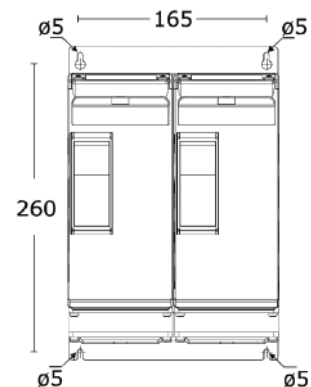
**SR13** W 186 mm. - H 269 mm. - D 170 mm. - kg. 6,8

**60A - 90A**



**SR16** W 186 mm. - H 273 mm. - D 170 mm. - kg. 7

**120A - 210A**



## 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 (mAeff)	I <sup>2</sup> T value for fusing tp=10msec.	Frequency range (Hz)	Power loss I=I <sub>nom</sub> (W)	Isolation Voltage Vac
60A	24+600V	1200	1600	450	100	15	4750	47+70	130	2500
90A	24+600V	1200	1600	450	2000	15	19100	47+70	168	2500
120A	24+600V	1200	1600	450	1540	15	11300	47+70	276	2500
150A	24+600V	1200	1600	450	2000	15	19100	47+70	324	2500
180A	24+600V	1200	1600	450	4800	15	108000	47+70	356	2500
210A	24+600V	1200	1600	450	5250	15	128000	47+70	404	2500

## Fan Specification

Supply: 230V Standard

Input Power 16W

Supply: 115V Option

Input Power 14W

## ORDERING CODES REVO M 2PH

Note 1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<b>REVO M 2PH</b>	<b>R</b>	<b>M</b>	<b>2</b>	-	-	-	-	-	-	-	-	-	-	-	-	-

4,5,6 Current	
Description code	Numeric code
60A	0 6 0
90A	0 9 0
120A	1 2 0
150A	1 5 0
180A	1 8 0
210A	2 1 0

7 Max Voltage	
Description code	Numeric code
480V	4
600V	6

8 Aux. Voltage supply	
Description code	Numeric code
90:130V (2)	1
170:265V (2)	2
230:345V (2)	3
300:530V (2)	5
510:690V (2)	6

9 Input	
Description code	Numeric code
SSR	S
0:10V dc	V
4:20mA	A
10KPot	K
RS485	R

10 Firing	
Description code	Numeric code
Zero Crossing ZC	Z
Burst Firing BF	B

11 Control Mode	
Description code	Numeric code
Open Loop	0
Voltage Feed Back V	U
Power Feed Back Vxl	W
Current Feedback I	I

12 Fuse & Option	
Description code	Numeric code
Fixed Fuse	F
Fixed Fuse + CT	Y
Fixed Fuse +CT +HB	H
Control Mode Retransmission 4:20mA	A
Control Mode Retransmission 0:10mA	V

13 Fan Voltage	
Description code	Numeric code
No Fan < 90A	0
Fan 110V ≥ 90A	1
Fan 220V ≥ 90A Std Version	2

14 Approvals	
Description code	Numeric code
CE EMC For European Market	0
cUL For American Market, Pending	L

15 Manual	
Description code	Numeric code
None	0
Italian Manual	1
English Manual	2
German Manual	3
French Manual	4

16 Version	
Description code	Numeric code
Std with fixed Fuses	1

### LEGEND

CT = Current Transformer

HB = Heater Break Alarm

Note (1): After 16th digit write current and voltage of load inside brackets Ex. (40A-400V)

Note (2): Load voltage must be included in Selected Auxiliary Voltage Range

