REVO M-1PH from 280A to 700A

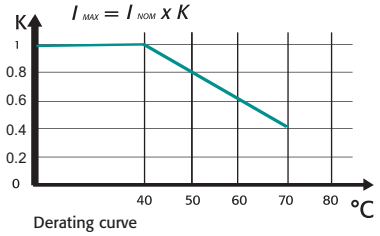
Universal Unit

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
- Configurablity via RS485, USB Port and frontal Key Pad
- Microprocessor based electronic circuit fully isolated from power
- Universal input signal: RS485,Pot, Analog and SSR
- Universal Firing Mode: Soft Start + Phase Angle, Delayed Triggering Firing, Single Cycle, Burst Firing
- Configurable Control Mode: V, I, V^2 and VxI
- Heather 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

Voltage power supply	From 24V to 480V Max (Std) 600V option available on all sizes. 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	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;
Digital input	4:30V dc 5 mA Max (On > 4Vdc Off < 1Vdc)
Firing	Soft Start + Phase Angle, Delay Triggering + Burst Firing, Soft Start + Burst Firing, Single Cycle, Selectable from frontal Key-Pad or via RS485.
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 estabilish 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 (Available on unit ≥400A)
Fan Voltage Supply	230V Std and 110V on request
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



Derating curve

USER'S MANUAL
Rev. 01/2012

OPTION'S FEATURES AND SPECIAL DETAILS

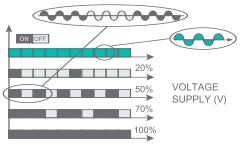
HEATER BREAK ALARM HB

ON FRONT CABINET

= FEW MINUTES TO SET AND CALIBRATE ALL THE UNITS

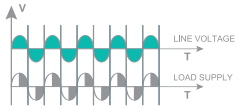
- Microprocessor based circuit
- Capacity to diagnose the failure of one Resistance over five in parallel
- Load failure alarm with LED indication on front unit
- Thyristor short circuit alarm with LED indication on front unit
- Alarm output with free voltage relay contact
- Alarm reset function and possibility to auto reset if the alarm disappear
- Built in Current transformer when heather Break option has been selected
- Self Setting via external command or push button on front unit
- Commom setting command can be given to many units and in a matter of second, the tuning is done, also by a non expert operator

BURST FIRING BF



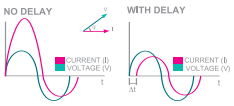
This firing is performed digitally within the thyristor unit at zero volts, producing no EMC interference. Analogue input is necessary for BF and the number of complete cycles must be specified for 50% power demand. This value can be between 1 and 255 complete cycles, determining the speed of firing.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

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 morepower 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

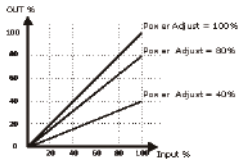


Used to switch the primary coil of transformers when coupled with normal resistive loads (not cold resistance) on the secondary, DT prevents the inrush current when zero voltage (ON-OFF) is used to switch the primary. The thyristor unit switches OFF when the load voltage is negative and switches ON only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



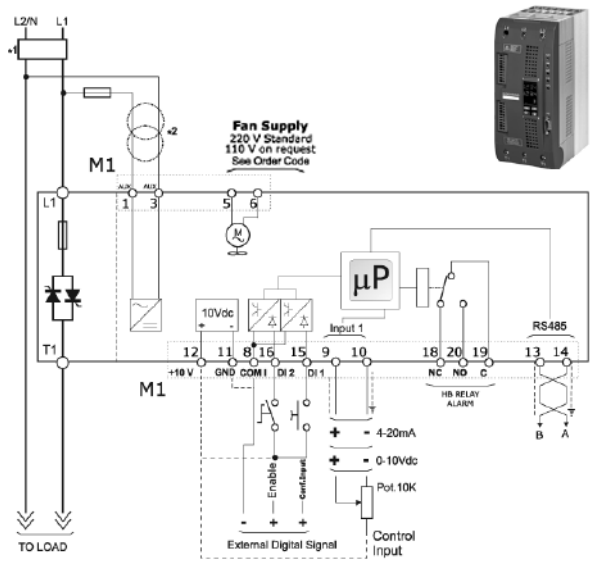
It's a scaling factor of the input command signal and limit the output of Thyristor unit. This parameter can be adjusted from 1 to 99% via RS485 or by the front of the unit If this parameter is setted at 50% and the input signal is 100% the output become 50% This feature is very useful to reduce the 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 doar where in a continuos furnace the material come into and flow out.The profile of temperature along furnace is higher in central zone because there is less dispersion but if we scale its input we can have a flat profile.

APPLICATIONS AND FOCUS ON:

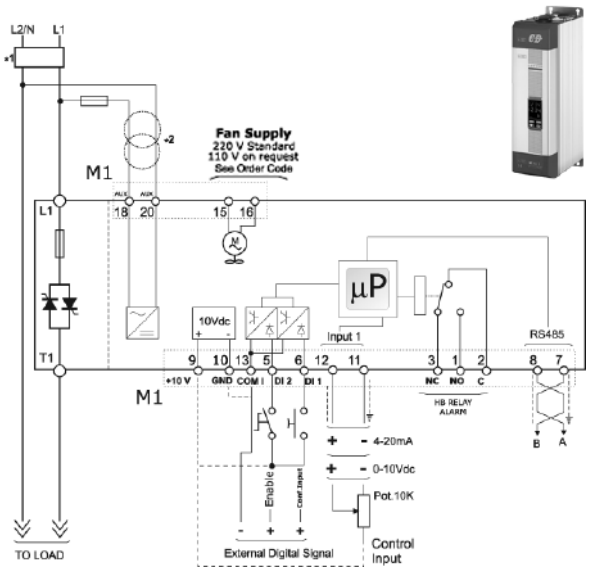
- Infrared lamp.
- Autoclaves.
- Furnaces.
- Heating Treatment
- Extrusion line.
- Dryers
- Climatic chambers
- Glass Industry
- Pharmaceutical

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

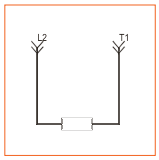
REVO M 1PH 280A



REVO M 1PH from 400 to 700A

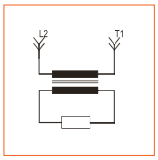


LOAD TYPE



Resistance and Infrared Lamps Long and medium waves

LOAD TYPE



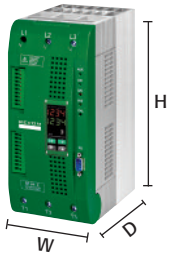
Delayed Triggering can be used with transformers coupled with Normal resistance

NOTE

(1) • 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 supplemetar 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 connected as above.

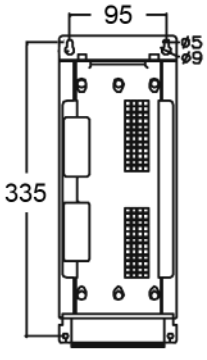
DIMENSION AND FIXING HOLES



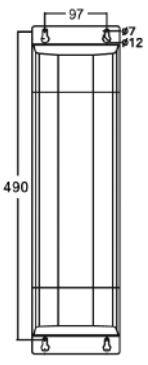
S9(H) W 120 mm. - H 350 mm. - D 230 mm. - kg. 5,5

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

280A



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)	I2T value for fusing tp=10msec	Frequency range (Hz)	Power loss I=Inom 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 M 1PH

Note 1

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

4, 5, 6 Current

Description code	Numeric code
280A	2 8 0
400A	4 0 0
500A	5 0 0
600A	6 0 0
700A	7 0 0

7 Max Voltage

Description code	Numeric code
480V	4
600V	6
690V (2)	7

8 Aux. Voltage supply

Description code	Numeric code
90:130V (3)	1
170:265V (3)	2
230:345V (3)	3
300:530V (3)	5
510:690V (3)	6
600:760V (3)	7

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
Single Cycle SC	C
Burst Firing BF	B
Soft Start + Burst Firing S+BF	J
Delayed Triggering + Burst Firing DT+BF	D
Phase Angle PA	P
Soft Start + Phase Angle S+PA	E

11 Control Mode

Description code	Numeric code
Open Loop	0
Voltage Feed Back V	U
Power Feed Back VxI	W
Voltage Square f/b V^2	Q
Current Feed Back I	I
Voltage to Power Feedback Transfer	T

12 Fuse & Option

Description code	Numeric code
Fixed Fuses	F
Fixed Fuses +CT	Y
Fixed Fuses Standard +CT + HB	H
Control Mode Retransmission 4:20mA	A
Fuse & Fuse Holder + CT +HB Terminals	H

13 Fan Voltage

Description code	Numeric code
Fan 110V	1
Fan 220V 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. (400A-400V)**
Note (2): **Available on unit ≥400A**
Note (3): **Load voltage must be included in Selected Auxiliary Voltage Range**