MULTIDRIVE 1PH 850A to 2700A

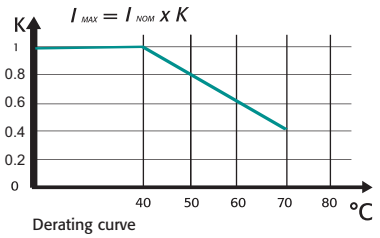
Universal 1Phase Thyristor Unit

GENERAL DESCRIPTION

- MULTIDRIVE is a Full digital and universal Thyristor unit based on a very powerful dedicated micro configurable via serial communication port for all inputs, firing modes, control modes and loads types.
- Suitable to drive resistive, inductive, transformer and complex loads requiring current limit and power control mode.
- Frontal Key Pad standard to configure all the internal functions and parameters.
- Four Analog output configuirable
- Six Digital input
- Four realay output
- Universal Input signal with automatic zero/span calibration.
- Universal Firing modes, customer configurable via Key Pad or communication port as Burst Firing and Phase Angle.
- Universal Feed back modes
- Soft Start can be used in addition to Burst Firing and Phase Angle.
- Short circuit Thyristor and Heater Break Alarm.
- RS 485 port. Modbus protocol
- Comply with EMC
- IP20 Protection

TECHNICAL SPECIFICATION

Operating Temperature	0+40°C over this temperature see derating curve
Voltage Power supply	480V standard, 600V or 690V on request
Auxiliary Voltage Supply	90÷265V; 20VA power consumption. Fan voltage supply: 230V ±15% as a standard and 110V on request.
Analog Input 1	Main reference, 4÷20mA, 0÷10V, 10KPOT, RS485 port
Analog Input 2	Secondary reference, 0÷10V, 10KPot
Analog Input 3	External Current Limit Set, via analog input 0-10V or KPot
Analog Ouput	Four Analog output (0÷20mA or 4÷20mA) for retransmitted of, Voltage, Power and current
Digital Input	Six optoisalated digital intput (12/24Vdc), for START, STOP, ENABLE, CALIBRATION, RESET ALARM and EXTERNAL ALARM
Relay Output	Three configurable relay output and one critical alarm
Universal Firing	One of these firing modes can be configured Burst Firing BF, Single Cycles SC, Soft Start + Burst Firing; Soft Start + Phase Angle S+PA; Delayed Triggering + Burst Firing DT + BF
Soft Start	Digital adjustable ramp rate
Control Mode	Voltage (V), Current Power (VxI) and External feedback
Heater Break Alarm	Circuit microprocessor based to diagnose partial or total load failure and short circuit on Thyristors
Communication	RS485 Port. Modbus communication protocol 9600 or 19200 bauds
Thermal protection	Available on forced ventilated units



Derating curve

USER'S MANUAL
Rev. 01/2012

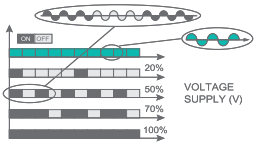
HEATER BREAK ALARM HB

ON FRONT CABINET

= FEW MINUTES TO SET AND CALIBRATE ALL THE UNITS

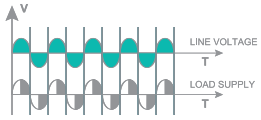
The Heather Break circuit diagnostic partial or total load failure. It reads load resistance with an internal voltage transducer and current transformer to calcolate the resitance value V/I.
The Heather Break circuit is compensated for voltage fluctuation,infact a voltage variation has no influence on 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 normaly open contact gives the alarm condition and an indication of the alarm type appears on display.

BURST FIRING BF



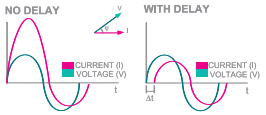
This firing is performed digitally within the thyristor unit at zero volts, producing no EMC interference. Analogue input is necessary for BF and the number of complete cycles must be specified for 50% power demand. This value can be between 1 and 255 complete cycles, determining the speed of firing.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

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.

CD EASY

This is a memory support tool that can be used by mantenance personnel on shop floor.
The user can copy the configuration of one unit and paste it into another.CD EASY is very simple with one push button to upload the configuration (Read and another to down load the stored configuration (Write)
This tool can be used with our Remote service to mail the working configuration via internet.

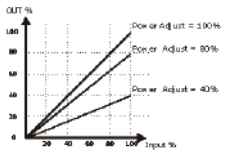
CD-KP

The CD-KP is designed mounted on front cabinet and to be connected with all cd automation's Thyristor units via RS485. On front unit is possible to read parameters, power, current, reference and alarms. One of these variables can be selected and retransmitted via an isolated output (4÷20mA or 0÷10V) On front unit is available a connector to comunicate with PC. In addition are available Local/Remote, up and down and function command.

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"

POWER SCALING



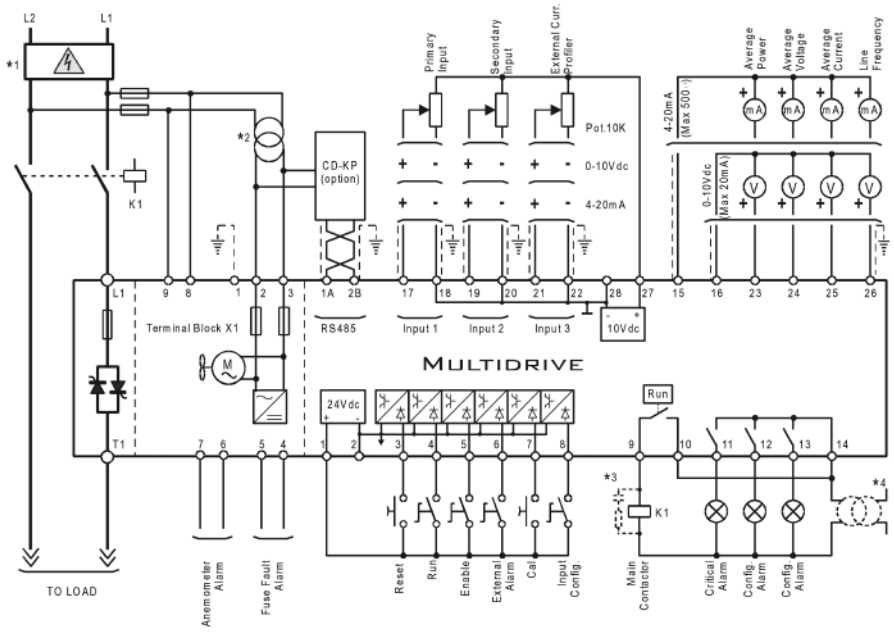
It's a scaling factor of the input command signal and limit the output of Thyristor unit. This parameter can be adjusted from 1 to 99% via RS485 or by the front of the unit If this parameter is setted at 50% and the input signal is 100% the output become 50% This feature is very useful to reduce the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

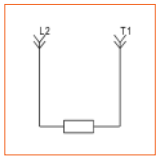
- Infrared lamp.
- Autoclaves.
- Fournaces.
- Chemical
- Petrochemical
- Climatic chambers
- Pharmaceutical

WIRING CONNECTION MULTIDRIVE 1PH from 850 to 2700A

MULTIDRIVE 1PH

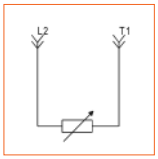


LOAD TYPE



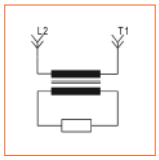
Resistance and Infrared Lamps

LOAD TYPE



Variable Resistances Super Kanthal or Silicon Carbide Elements

LOAD TYPE



Transformers and Inductances

NOTE

(1) • The user must provide for protection external electromagnetic circuit breaker or fuse isolator.

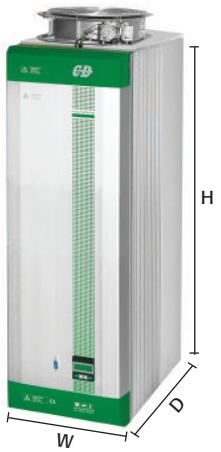
(2) • Use an appropriate external transformer to supply the electronic board (see the identification label)

(3) • The coil contactor, the relays and other inductive loads must be equipped with proper RC filter.

(4) • Before to give the Start command supply the input of auxiliary voltage

DIMENSION AND FIXING HOLES

S14 1PH H 520 **x** W 262 **x** D 270 - 22,5kg. **(850A)**



S18 1PH H 580 **x** W 263 **x** D 435 - 28kg. **(1000A)**

S19 1PH H 780 **x** W 263 **x** D 435 - 39kg. **(1400A/1500A)**

S20 1PH H 780 **x** W 263 **x** D 533 - 48kg. **(2000/1850A)**

S21 1PH H 890 **x** W 263 **x** D 518 - 58kg. **(2400/2700A)**

OUTPUT FEATURES (POWER DEVICE)

Current A	Voltage range (V)	Ripetitive peak reverse voltage (600V)	(690V)	Latching current (mAeff)	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
850A	330÷690V	1600	1800	1000	17800	15	1027000	47÷70	3000	2500
1000A	330÷600V	1600	N.A.	700	12500	300	781000	47÷70	3300	2500
1400A	330÷690V	1600	1800	700	24600	300	3026x1E3	47÷70	4620	1700
1500A	330÷600V	1600	N.A.	700	24600	300	3026x1E3	47÷70	5625	1700
1850A	330÷690V	1600	1800	700	36000	300	6480x1E3	47÷70	6105	2500
2000A	330÷600V	1800	N.A.	700	36000	300	6480x1E3	47÷70	6600	2500
2400A	330÷690V	1800	1800	700	60000	300	180000x1E3	47÷70	8000	2500
2700A	330÷600V	2200	N.A.	700	60000	300	180000x1E3	47÷70	10125	2500

Note 1

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

4, 5, 6 Current

Description code	Numeric code
850A	0 8 5 0
1000A	1 0 0 0 (2)
1400A	1 4 0 0
1500A	1 5 0 0 (2)
1850A	1 8 5 0
2000A	2 0 0 0 (2)
2400A	2 4 0 0
2700A	2 7 0 0 (2)

7 Max Voltage

Description code	Numeric code
480V	4
600V	6
690V	7

8 Aux. Voltage supply

Description code	Numeric code
110V	1
230V	2

9 Input

Description code	Numeric code
SSR 3:30V dc	S
0:10V	V
4:20 mA	A
10 K Pot	K
RS485	R

10 Firing

Description code	Numeric code
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
Current Feed Back I	I
External Feed Back	E

12 Option

Description code	Numeric code
4:20mA Retransmission	A (3)
0:10V Retransmission	V (3)

13 Fan Voltage

Description code	Numeric code
Fan Voltage equal to Aux. Voltage	3

14 \ Approvals

Description code	Numeric code
CE EMC For European Market	E

15 Manual

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

16 Load type

Description code	Numeric code
Resistive Load	8
Transformer	9

LEGEND
IF = Internal Fixed Fuse
CT = Current Transformer
HB = Heater Break Alarm

Note (1): After 16th digit write current and voltage of load inside brackets Ex. (190A-400V). this is to receive the Thyristor unit already tuned from CD Automation

Note (2): Rating not available at 690V

Note (3): In total are available 4 Analog Output.
One dedicated to Control Mode and the other 3 dedicated to Current, Voltage etc.