

# TRANSIENT ELECTRONIC LOAD & SOURCE SIMULATOR

**Application:** MELT series of low time constant Load controllers source simulators are available in more than 10 different models (10 to 10,000 kilo watts) including some tailor made models practically offering readymade electrical loading simulation solution in measurement, testing / diagnostic of any principal parameter like power, voltage/current as well as other inferential parameter like rated power/torque capacity, overload reactive /real power, torque capacity, efficiency, plotting torque/speed and power/speed curve, desired phase trajectories of D.C./A.C. generator, phase converter, slip ring motor, frequency converter (low/high rpm), transformer, switchgears, transmission/distribution line, battery, rectifier or any non-linear load in constant resistance/power or current mode or simulate source behaviour of power generating capacity of electrical/electronic/mechanical devices like thermoelectric generator, photo-voltaic cell, hydroelectric turbine, wind generators, welding generators etc. These fast responding load controllers/source simulators has ability to detect fast variation in alternator parameters on account of its ultra low constant due to low mechanical time constant, windage losses, least rheological problem, mechanical black-lash/ dead band, and exhibits a repeatable and hysteresis less Torque/Power vs. Excitation current characteristics which guarantees accurate identification of parameters during steady state/transient conditions.

## Operating Principle:

These load controller/source simulators can operate in both absorbing mode as well in sourcing mode (four/two/single quadrant) with smooth transition between each mode. While performing in regenerative mode, power is transferred into electricity main. with this type of load controller an infinitely small variable load can be applied at constant resistance/current/power/torque mode or profiled in specific manner. It offers linear/stable parametric. These load controllers can be used to estimate internal losses in captive source while working in driving mode.

Power/voltage absorbed/delivered by load controller is given as under....

$$P = V_1 \cdot V_1 / Z - V_1 \cdot V_2 \cdot \cos(O_1) / Z$$

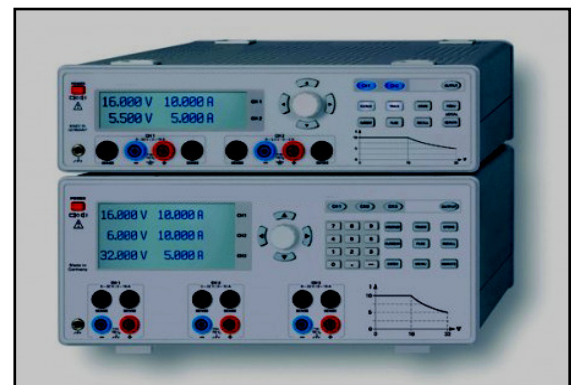
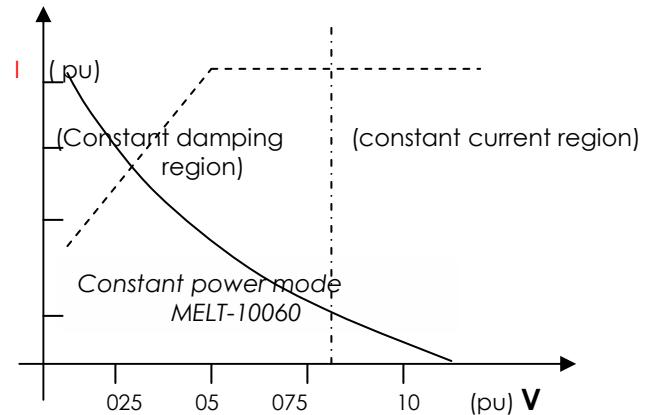
$V_1$ : source voltage,  $V_2$ : controlled load voltage

$Z$ : network impedance,  $O_1$ : phase shift between  $V_1$  &  $V_2$ ,

Feedback controlled power supply ensure fine resolution in loading i.e. 0.1% of current/voltage/power OR derived unite at any time, with a very high degree of stability and repeatability.

## General Electrical /Mechanical Specification:

Main Operating voltage: 180-240 volts, 1 phase, 40-60 Hz  
 Absorbed power: upto 1500 kilo watt  
 Under Loading source voltage/current: 6000 volt/1000 D.C./AC  
 Under Loading source Voltage/current ripple: 10% of reading maximum output  
 Loading Voltage/current harmonic: 3% of reading maximum output  
 Load compatibility: linear/non-linear power source (AC/DC)  
 Loading mode: 1. constant current/ 2. Constant voltage  
 Loading current regulation:  
 Current regulation: 1% of load current  
 (Input voltage:  $\pm 2\%$  of maximum current for a  $\pm 10\%$  input line change)  
 Loading Resolution: 0.1 volt /0.1 amps  
 Voltage regulation: 1% of reading loaded voltage source  
 Control: 1.cascade mode feed back control (constant voltage/current)  
 Loading Accuracy: 99% of set point (Voltage/current)  
 Loading Resolution: 0.1 volt /0.1 amps  
 Overload: 125% for 15 min  
 Soft start: 0.1-10 second adj.  
 Protection: Current limit/Current trip: against any reverse polarity to reset power supply to zero./ Short circuit and over load protection./  
 Switchgear: O/L, ELCB  
 Display: 5-1/2 digit red glow display for voltage/current /power  
 Interface: RS-232 connectivity



MELT50120

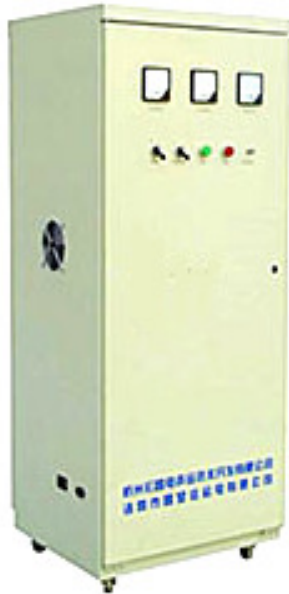
Load controller Test Bench (grid load simulator)

**MOTORON SEMICONDUCTORS CORPORATION**

11, Shri Nagar Colony, Shakti Nagar Extension, Delhi-110052 Tel: 011-2365 5454 / 2364 8181

E.mail: [motoron@hotmail.com](mailto:motoron@hotmail.com)

# TRANSIENT ELECTRONIC LOAD CONTROLLERS & SIMULATOR



**ELECTRONIC A.C. LOAD TESTER**  
MELT-10060



**ELECTRONIC TURBINE LOAD SIMULATOR**  
MELT-50120

Technical specifications and selection chart (MELT series)

P<2000.0 kilowatts

Model	Power (K.W.)	Rated volt AC/DC	Ampere AC/DC	Frequency KHz	Cooling Water/Air	Thermal rise °C (an hour)
MELT150010	1500.0	1000	1500.0	Upto 800	Liquid	65
MELT100010	1000.0	1000	1000.0	Upto 800	Liquid	65
MELT075008	750.0	750.0	1000.0	Upto 800	Air	65
MELT060008	600.0	400/800	1500.0/750.0	Upto 800	Air	65
MELT030008	300.0	400/800	750.0/375.0	Upto 800	Air	65
MELT010008	100.0	400/800	250.0/125.0	Upto 800	Air	65
MELT005004	050.0	400	125.0	Upto 800	Air	65
MELT002004	020.0	400	50.0	Upto 800	Air	65
MELT001002	010.0	200	50.0	Upto 800	Air	65
MELT000502	005.0	200	25.0	Upto 800	Air	65
MELT000202	002.0	100/200	20.0/10.0	Upto 800	Air	65
MELT000102	001.0	100/200	10.0/5.0	Upto 800	Air	65
MELT000101	000.5	10/20/50	50/25/10	Upto 800	Air	65

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Technical specifications and selection chart (MELT series)

P<1500 watts

Model	Power (watts)	Voltage AC/DC	Frequency K.Hz	Amps (AC/DC)	Cooling Water/Air	Thermal rise °C (an hour)
MELT15001	1500.0	<100 /option	Upto 800	<15.0	Liquid	65
MELT10001	1000.0	< 100 /option	Upto 800	<10.0	Liquid	65
MELT07501	750.0	< 100 /option	Upto 800	<08.0	Air	65
MELT05001	500.0	< 100 /option	Upto 800	<05.0	Air	65
MELT02501	250.0	< 50 /option	Upto 800	<03.0	Air	65
MELT01001	100.0	< 50 /option	Upto 800	<01.0	Air	65
MELT00501	50.0	< 20 /option	Upto 800	<3.0	Air	65
MELT00201	20.0	< 10 /option	Upto 800	<2.0	Air	65
MELT00101	10.0	< 10 /option	Upto 800	<15.0	Air	65
MELT00501	5.0	< 6 /option	Upto 800	<10.0	Air	65
MELT00201	2.0	< 3 /option	Upto 800	<0.66	Air	65
MELT00101	1.0	< 3 /option	Upto 800	<0.33	Air	65
MELT00052	0.5	< 1.5 /option	Upto 800	<0.15	Air	65

Mechanical Dimension of Electronic load controller

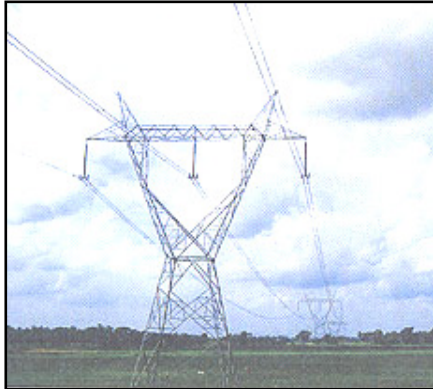
Model	Size inch	Model	Size inch	Model	Size inch	Model	Size Inch
MELT150010	24x24x72-2	MELT005004	24x24x60	MELT15001	18x12x12	MELT00202	18x12x12
MELT100010	18x24x72-2	MELT002004	18x24x48	MELT10001	15x12x12	MELT00101	15x12x12
MELT075008	18x24x72-2	MELT001002	24x24x48	MELT07501	12x08x08	MELT00501	12x08x08
MELT060008	18x24x72-2	MELT000502	18x24x48	MELT05001	12x08x08	MELT00201	12x08x08
MELT030008	18x24x72-2	MELT000202	24x24x48	MELT02501	08x06x06	MELT00101	8x06x06
MELT010008	24x24x60-2	MELT000102	18x24x48	MELT01001	08x06x06	MELT00052	08x06x06
MELT005004	18x24x60-2	MELT000101	24x24x48	MELT00501	08x06x06	MELT00201	08x06x06

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(SOME OF THE APPLICATION OF LOAD TESTER/SOURCE SIMULATOR)



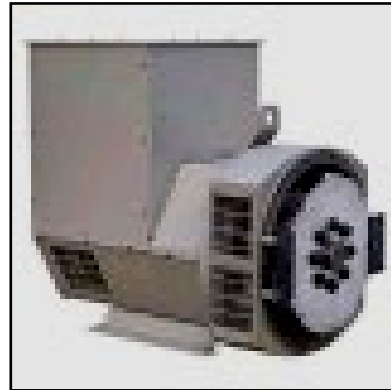
TRANSMISSION/DISTRIBUTION LINE



TRANSFORMER (DISTRIBUTION/TRANSMISSION)



TROLLEY GENERATOR



H.T.GENERATOR



SWITCHGEAR



HIGH VOLTAGE TRANSFORMER



Batteries

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