



PROGRAMMABLE AC ELECTRONIC LOAD MODEL 63800 SERIES

Chroma's 63800 Series AC Electronic Loads are designed for testing uninterruptible power supplies, AC sources and other power devices such as switches, circuit breakers, fuses and connectors. The power rating, paralleling and synchronization capabilities make the 63800 an ideal tool for high power AC test simulation.

The 63800 Loads can simulate high crest factor and varying power factor load conditions with real time correction base on voltage distortion. These special features provide real world simulation capability and prevent over-stressing that allow AC products to be tested automatically and reliability.

Equipped with unique timing measurement functions, the 63800 Loads allow users to measure the UPS life cycle .

The 63800 Loads include voltage and current readback capability allowing users to observe the AC load current and output voltage of either discretely with via oscilloscope using analog outputs. In addition, the load provides TTL signals to control external relays for short circuit (crowbar) testing.

The 63800 Series AC Loads also provide necessary measurement functions along with GPIB & RS-232 interfaces for the most demanding engineering tests and ATE applications.

Other features of the 63800 Loads include built in fan speed control to minimize audio noise, internal self-diagnosis firmware and full protection against over-power, over-current and over-temperature.

Programmable AC Electronic load

MODEL 63800 SERIES

Key Features:

- Power Rating: 4500VA
- Voltage Range: 50V - 350Vrms
- Current Range: Up to 45Arms
- Frequency Range: 45 to 70Hz
- Real time power factor correction prevents over-stressing
- Crest Factor Range: 1.414 to 5.0
- Power Factor Range: 0 to 1
- CC,CR,CP load modes
- Voltage & Current Monitoring
- Measurement: V, I, PF, CF, P, Q, S, F, R and Ip/+
- Short circuit simulation
- Full protection: OP,OC,OV and OT protection
- GPIB & RS-232C interfaces

Model 63802



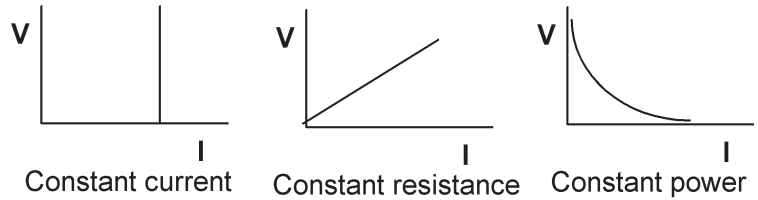
Chroma



1.Application Specific Load Simulation

The operating frequency range of the 63800 Loads is 45Hz to 70Hz. Modes included are constant current, constant resistance and constant power as depicted below.

When testing constant voltage devices like UPSs and power inverter, CC and CR modes are helpful in verifying these devices remain stable and/or within regulated limits under different current & resistance load settings. Many of these loads have power consumption patterns which are constant power in nature. Consequently, the Load's CP mode is designed to simulate these load types and is essential for power inverter testing.



2.Crest Factor & Power Factor with real time correction

The specification range of CF is 1.414 to 5.0 and PF is 0 to 1 lead or lag (limited by crest factor). The 63800 load controls power factor by shifting the current relative to the input voltage to generate a displacement power factor. If the PF programmed is positive it will be a leading PF, negative programmed values result in a lagging PF.

The CF & PF control is only used while in CC or CP modes with the operating range limit as figure 1. For example, for a programmed crest factor of 1.414, the power factor allowed is only 1 assume that the input voltage is 350Vrms sine-wave. However, for a programmed CF of 2.0, the PF may range from 0.608 to 0.85, for a programmed CF of 3.0, the PF may range from 0.211 to 0.6 and so on. Thus, if a higher desired power factor the lower the range of crest factors, and vice versa.

Note also that when high crest factors are programmed some UUTs will respond with a distorted voltage waveform (see figure 2) which changes the resultant power factor. The 63800 AC load is capable to automatically (in real-time) shift the current waveform to maintain the desired power factor setting, thereby compensating for voltage distortion of the UUT's output.

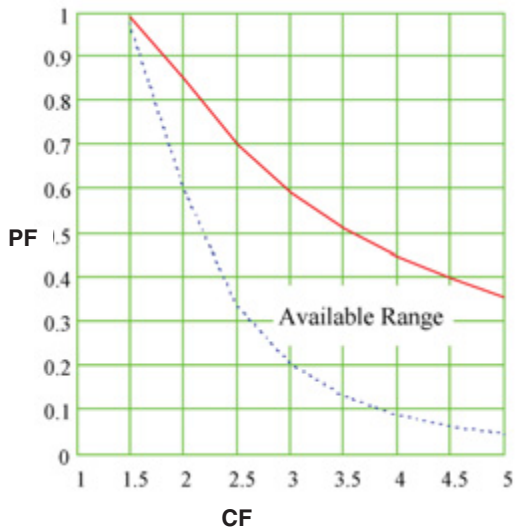


Figure 1:Crest Factor vs.Power Factor control Range

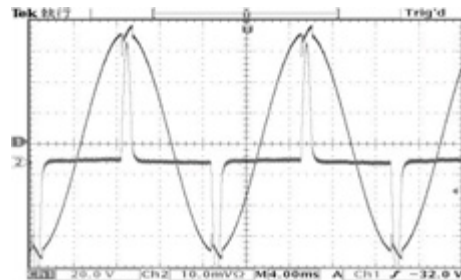


Figure 2

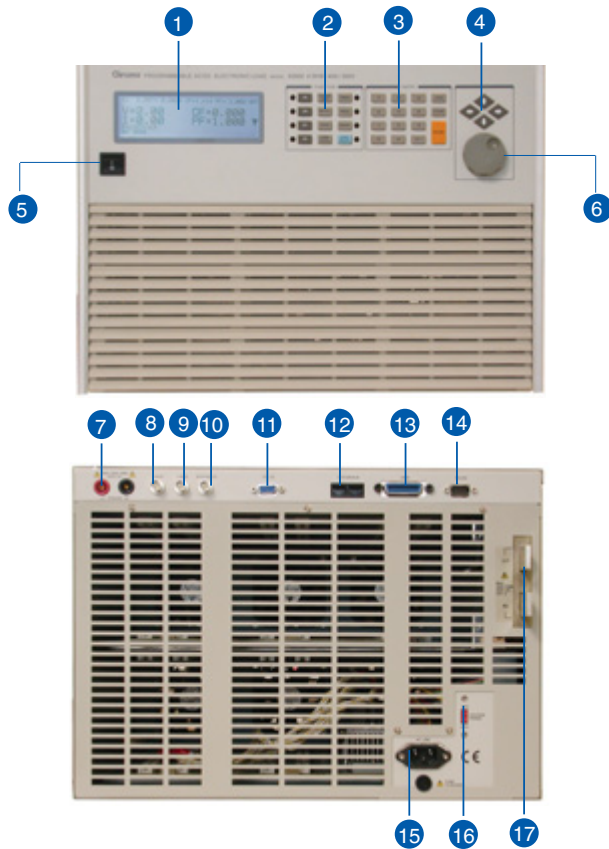
$$CF_i = I_{pk} / I_{rms}$$

$$PF = \text{Active Power} / \text{Apparent power}$$

3.Comprehensive Measurements

Chroma's 63800 Series AC Electronic Loads includes built-in 16-bits precision measurement circuits and firmware utilities to measure the steady-state and transient responses for true RMS voltage, true RMS current, true power(P), apparent power(S), reactive power(Q), crest factor, power factor and peak repetitive current. In addition to these discrete measurements, analog outputs for voltage and current are provided as a convenient means of monitoring these signals via an external oscilloscope.

4. Panel Overview



- 1. LCD Display:**
For Setting and measurements read back
- 2. Function key:**
To select load mode, control mode, and system config setting
- 3. Numeric key: For data setting**
- 4. Cursor key: For setting and editing**
- 5. Power switch**
- 6. Rotary knob:**
It adjusts the loading and parameter setting
- 7. Voltage sense terminal**
- 8. Current monitor output:**
Analog output to indicate the current waveform
- 9. Voltage monitor output:**
Analog output to indicate the voltage waveform
- 10. System I/O:**
Synchronous signal for master/slave parallel control
- 11. TTL I/O:**
For system input/output control signal
- 12. System Bus:**
For master/slave control system data communication
- 13. GPIB connector**
- 14. RS-232C connector**
- 15. AC Input connector**
- 16. AC input voltage switch**
- 17. Load terminal**

APPLICATIONS

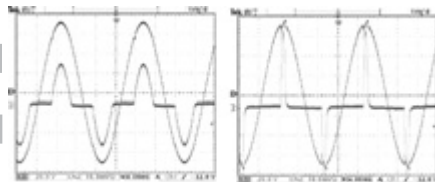
1. UPS & Power Testing

Uninterruptible Power Supplies (UPSs) and power inverter are known as safe-guard systems. The 63800 is designed to provide precisely controlled non-linear loads with programmable crest factor and power factor to replace resistive load banks for testing these devices. This technology allows real world test conditions to be reliably and repetitive applied which are not possible with passive resistive loading.



CC MODE

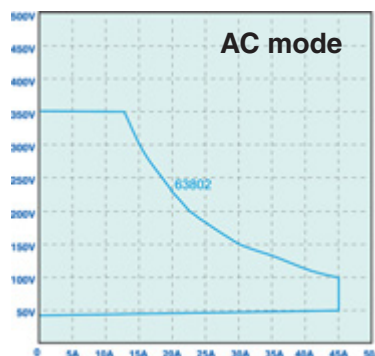
CP MODE



2. System Integration

Chroma's 63800 AC Electronic Loads have GPIB, RS-232C and PC controllable interfaces. Additionally, external load ON/OFF by TTL signal, AC-ON signal output with /fault out signal and voltage / current monitoring capabilities make the 63800 Loads ideal for integration into automatic test system.

V-I CURVE OPERATING CHARACTERISTICS (TYPICAL) OF 63800 SERIES



* Ambient temperature 0~34°C

SPECIFICATIONS

Model	63802
Power* ¹	4500VA
Current	0 to 45Arms (135 Apeak)
Voltage	50 to 350Vrms (500 Vpeak)
Frequency	45 to 70Hz
Constant Current Mode	
Range	0 to 45Arms, Programmable
Accuracy	0.1% + 0.2%FS
Resolution	3mA
Constant Resistance Mode	
Range	2.5 Ω ~ 1K Ω
Accuracy	0.5% + 0.5%FS
Resolution	50 u mho
Constant Power Mode	
Range* ²	4500W, Programmable
Accuracy* ³	0.2% + 0.3%FS
Resolution	1.125W
Crest Factor	
Range	1.414 to 5.0, Programmable
Accuracy	1.5% + 0.1%FS (I >10%FS)
Resolution	0.005
Power Factor	
Range	0 to 1, Programmable
Accuracy	1%FS (PF>0.3)
Resolution	0.001
Measurement	
DVM Range	0.0 to 500.0V
DVM Accuracy	0.1% + 0.1%FS
DVM Resolution	10 mV
DAM Range	0.0 to 150.00A
DAM Accuracy	0.1% + 0.2%FS
DAM Resolution	2.5 mA
CF Accuracy	1.5% + 0.1%FS (I >10%FS)
Others	
Vmonitor	500V/10V(Isolated) / 3%FS
Imonitor	150A/10V(Isolated) / 3%FS
Protection	OCP: 48Arms, OVP:355Vrms OPP:4800VA, OTP
Parallel Ability	Yes
Interface	External : GPIB, RS-232 , Internal : CAN bus, TTL I/O
Line Voltage	115/230 Vac ± 15%
(Pure) Inductive Load	No
(Pure) Capacitive Load	No
Dimension	7U
External load ON/OFF	The AC load can be achieved by TTL high signal.
AC-ON	When AC Load is on, this pin turns into HIGH and turns into LOW when the load is off.
/Fault out	The voltage level of this pin is HIGH if AC load is in normal state. It turns into LOW when AC load is in protection state. (I _{ol}) low level output current = +1.25mA max. (V _{ol}) low level output voltage = 0.5V max.

* Note: *¹ Ambient temperature 0~34 °C

All specifications are subject to change without notice.

*² PF=1*³ FS= Vmax x Imax**ORDERING INFORMATION****63802:** Programmable AC Electronic Load 4500VA/45A/350V

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