

High Speed DC Load Model 6330A Series

KEY FEATURES

- Improve operating speeds of load for auto test system integration
- Synchronous paralleling control mode, allow Synchronous load control under static and dynamic Loading mode up to 6000W
- Up to 8 channels in one mainframe, fit for testing Multiple output SMPS.
- GPIB/RS-232/USB Interface
- Max Power: 200W, 100W x 2(Dual), 30W&250W, 300W, 600W, 1200W
- Voltage Range: 0-80V / 0V-500V
- CC, CR, CV, CP operating modes
- Dynamic loading with speed up to 20KHz
- Programmable slew rate, up to 10A/μs
- Only need 1V to draw rated current
- Individual panel meters
- Real time power supplies load transient response simulation and output measurement
- 16-bit precision voltage and measurement with dual-range selection
- Remote sensing capability
- Short circuit test
- Self-test at power-on
- CE marking

Chroma Model 6330A series high speed DC electronic improves CPU clock, baud rate, parser and added synchronic parallel function for fast operation, which is ideal for auto test system integration to increase your manufacturing test throughput. Plugging the user selectable load modules into the system mainframe can also provide easy system configuration and future reconfiguration configure the system.

The 6330A family offers 8 types of modular loads with power ranging from 30 watts to 1200 watts, current from 0.5mA to 240A, and voltage measurement from 0.5mV to 500V. Each load is isolated and floating, programmable in dual current range and measuring voltage range, and capable of synchronizing with other modules for control operating. The load can be operated in constant current, constant voltage, and constant resistance.

With Synchronic parallel control capability, 6330A series loads allow users to parallel and synchronize more than one load together from an internal loading control signal. This feature provides synchronic dynamic loading test for multi-output power and high power test solution.

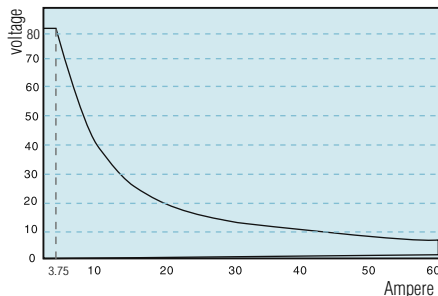
Real time measurement of voltage, current, is integrated into each 6330A load module using a 16-bit precision measurement circuit. The user can perform on line voltage measurement and adjustment, or simulate short circuit test using the simple keypad on the front panel.

The 6330A have self-diagnosis routine to maintain instrumental performance all the time. It is also protected against OP, OC, OT protection, and alarm indicating OV, reverse polarity to guarantee quality and reliability for even the most demanding engineering testing and ATE application.

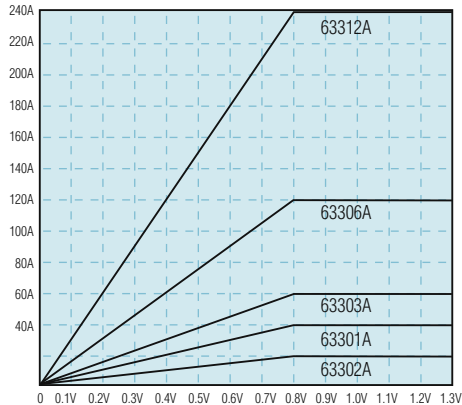
The FET technology accomplishes minimum input resistance and enables the load to sink high current even at very low voltage. For example, model 63303A is capable of sinking 60A at 1V output, and well-suited for testing the new 3V low voltage power supplies. Low voltage operation, down to zero volt, is possible at correspondingly reduced current level. (see below)

Chroma has created the industries first LED Load Simulator for simulating LED loading with our 63110A load model from our 6310A series Electronic Loads. By setting the LED power driver's output voltage, and current, the Electronic Load can simulate the LED's loading characteristics. The LED's forward voltage and operating resistance can also be set to further adjust the loading current and ripple current to better simulate LED characteristics. The 63110A design also has increased bandwidth to allow for PWM dimming testing.

MODEL 63303A INPUT CHARACTERISTICS



LOW VOLTAGE CHARACTERISTICS (TYPICAL) OF 63301A/63302A/63303A/63306A/63312A



Note: All specifications are measured at load input terminals. (Ambient Temperature of +25°C)

ORDERING INFORMATION

- 6332A:** Mainframe for 2 Load Modules
- 6334A:** Mainframe for 4 Load Modules
- 63301A:** Load Module 40A/80V/200W
- 63302A:** Load Module 20A/80V/100Wx2 channels
- 63303A:** Load Module 60A/80V/300W
- 63305A:** Load Module 10A/500V/300W
- 63306A:** Load Module 120A/80V/600W
- 63307A:** Load Module 5A&40A/80V/30W&250W
- 63308A:** Load Module 20A/500V/600W
- 63312A:** Load Module 240A/80V/1200W
- 63310A:** Load Module 2A/500V/100Wx2 channels
- 63323A:** Load Module 60A/80V/350W
- A631000:** GPIB Interface for Model 6334A/6332A Mainframe
- A631003:** USB Interface for Model 6334A/6332A Mainframe
- A631001:** Remote Controller
- A800042:** Test Fixture
- A631005:** Softpanel for 6310A/6330A series
- A632004:** Sync. Link Box for 6330A/63200 Series



6330A Series High Speed DC Electronic Load Family

SPECIFICATIONS

Model	63310A (100Wx2)	
Power	100W	
Current	0-0.6A	0-2A
Voltage*3	0-500V	
Min. Operating Voltage	6V@2A	
LED MODE		
Range	Operation Voltage: 0-100V/0-500V Rd Coefficient : 0.001-1	
Resolution	VL: 4mV VH: 20mV	
CONSTANT RESISTANCE MODE		
Range	CRL: 3Ω-1kΩ (100W/100V) CRH: 10Ω-10kΩ (100W/500V)	
Resolution	CRL: 20μ mho CRH: 2μ mho	
Accuracy	1kΩ : 0.001mho+0.2% 10kΩ : 0.0001mho+0.1%	
CONSTANT VOLTAGE MODE		
Range	0-500V	
Resolution	20mV	
Accuracy	0.05% ± 0.1% F.S.	
CONSTANT CURRENT MODE		
Range	0-0.6A	0-2A
Resolution	12μA	40μA
Accuracy	0.1%+0.2% F.S.	0.1%+0.2% F.S.
MEASUREMENT SECTION		
VOLTAGE READ BACK		
Range	0-100V	0-500V
Resolution	2mV	10mV
Accuracy	0.025%+0.025% F.S.	
CURRENT READ BACK		
Range	0-0.6A	0-2A
Resolution	12μA	40μA
Accuracy	0.05%+0.05% F.S.	

All specifications are subject to change without notice.

High Speed DC Electronic Load

Model No.

6330A Series

SPECIFICATIONS-1								
Model	63301A		63302A (100Wx2)		63303A		63305A	
Power	20W	200W	20W	100W	30W	300W	30W	300W
Current	0-4A	0-40A	0-2A	0-20A	0-6A	0-60A	0-1A	0-10A
Voltage *3	0-80V		0-80V		0-80V		0-500V	
Min. Operation Voltage (DC) *1 (Typical)	0.4V@2A 0.8V@4A	0.4V@20A 0.8V@40A	0.4V@1A 0.8V@2A	0.4V@10A 0.8V@20A	0.4V@3A 0.8V@6A	0.4V@30A 0.8V@60A	1.0V@0.5A 2.0V@1A	1.0V@5A 2.0V@10A
Constant Current Mode								
Range	0-4A	0-40A	0-2A	0-20A	0-6A	0-60A	0-1A	0-10A
Resolution	1mA	10mA	0.5mA	5mA	1.5mA	15mA	0.25mA	2.5mA
Accuracy	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.
Constant Resistance Mode								
Range	0.0375 Ω -150 Ω (200W/16V) 1.875 Ω -7.5k Ω (200W/80V)		0.075 Ω -300 Ω (100W/16V) 3.75 Ω -15k Ω (100W/80V)		0.025 Ω -100 Ω (300W/16V) 1.25 Ω -5k Ω (300W/80V)		1.25 Ω -5 Ω (300W/125V) 50 Ω -200k Ω (300W/500V)	
Resolution	6.667m mho (200W/16V) 133μ mho (200W/80V)		3.333m mho (100W/16V) 66.667μ mho (100W/80V)		10m mho (300W/16V) 200μ mho (300W/80V)		200μ mho (300W/25V) 5μ mho (300W/500V)	
Accuracy	150 Ω : 0.1mho + 0.2% 7.5k Ω : 0.01mho + 0.1%		300 Ω : 0.1mho + 0.2% 15k Ω : 0.01mho + 0.1%		100 Ω : 0.1mho + 0.2% 5k Ω : 0.01mho + 0.1%		5k Ω : 20m mho+ 0.2% 200k Ω : 5m mho+ 0.1%	
Constant Voltage Mode								
Range	0-80V		0-80V		0-80V		0-500V	
Resolution	20mV		20mV		20mV		125mV	
Accuracy	0.05% ± 0.1%F.S.		0.05% ± 0.1%F.S.		0.05% ± 0.1%F.S.		0.05% ± 0.1%F.S.	
Constant Power Mode								
Range	0-20W	0-200W	0-20W	0-100W	0-30W	0-300W	0-30W	0-300W
Resolution	5mW	50mW	5mW	25mW	7.5mW	75mW	7.5mW	75mW
Accuracy	0.5% ± 0.5%F.S.		0.5% ± 0.5%F.S.		0.5% ± 0.5%F.S.		0.5% ± 0.5%F.S.	
Dynamic Mode								
Dynamic Mode	C.C. Mode		C.C. Mode		C.C. Mode		C.C. Mode	
T1 & T2	0.025ms ~ 50ms / Res: 5μs 0.1ms ~ 500ms / Res: 25μs 10ms ~ 50s / Res: 2.5ms		0.025ms ~ 50ms / Res: 5μs 0.1ms ~ 500ms / Res: 25μs 10ms ~ 50s / Res: 2.5ms		0.025ms ~ 50ms / Res: 5μs 0.1ms ~ 500ms / Res: 25μs 10ms ~ 50s / Res: 2.5ms		0.025ms ~ 50ms / Res: 5μs 0.1ms ~ 500ms / Res: 25μs 10ms ~ 50s / Res: 2.5ms	
Accuracy	1μs/1ms+100ppm		1μs/1ms+100ppm		1μs/1ms+100ppm		1μs/1ms+100ppm	
Slew Rate	0.64-160mA/μs	6.4-1600mA/μs	0.32-80mA/μs	3.2-800mA/μs	0.001-0.25A/μs	0.01-2.5A/μs	0.16-40mA/μs	1.6-400mA/μs
Resolution	0.64mA/μs	6.4mA/μs	0.32mA/μs	3.2mA/μs	0.001A/μs	0.01A/μs	0.16mA/μs	1.6mA/μs
Min. Rise Time	10μs (Typical)		10μs (Typical)		10μs (Typical)		24μs (Typical)	
Current	0-4A	0-40A	0-2A	0-20A	0-6A	0-60A	0-1A	0-10A
Resolution	1mA	10mA	0.5mA	5mA	1.5mA	15mA	0.25mA	2.5mA
Current Accuracy	0.4%F.S.		0.4%F.S.		0.4%F.S.		0.4%F.S.	
Measurement Section								
Voltage Read Back								
Range	0-16V	0-80V	0-16V	0-80V	0-16V	0-80V	0-125V	0-500V
Resolution	0.25mV	1.25mV	0.25mV	1.25mV	0.25mV	1.25mV	2mV	8mV
Accuracy	0.025% + 0.025%F.S.		0.025% + 0.025%F.S.		0.025% + 0.025%F.S.		0.025% + 0.025%F.S.	
Current Read Back								
Range	0-4A	0-40A	0-2A	0-20A	0-6A	0-60A	0-1A	0-10A
Resolution	0.0625mA	0.625mA	0.03125mA	0.3125mA	0.09375mA	0.9375mA	0.016mA	0.16mA
Accuracy	1mA	10mA	0.5mA	5mA	1.5mA	15mA	0.25mA	2.5mA
Power Read Back*2								
Range	0-20W	0-200W	0-20W	0-100W	0-30W	0-300W	0-30W	0-300W
Accuracy	0.1% + 0.1%F.S.		0.1% + 0.1%F.S.		0.1% + 0.1%F.S.		0.1% + 0.1%F.S.	
Protective Section								
Over Power Protection	≒ 20.8W	≒ 208W	≒ 20.8W	≒ 104W	≒ 31.2W	≒ 312W	≒ 31.2W	≒ 312W
Over Current Protection	≒ 4.08A	≒ 40.8A	≒ 2.04A	≒ 20.4A	≒ 6.12A	≒ 61.2A	≒ 1.02A	≒ 10.2A
Over Temperature Protection	≒ 85°C		≒ 85°C		≒ 85°C		≒ 85°C	
Over Voltage Alarm*3	≒ 81.6V		≒ 81.6V		≒ 81.6V		≒ 510V	
General								
Short Circuit								
Current (CC)	-	≒ 40A	-	≒ 20A	-	≒ 60A	-	≒ 10A
Voltage (CV)	-	0V	-	0V	-	0V	-	0V
Resistance (CR)	-	≒ 0.0375 Ω	-	≒ 0.075 Ω	-	≒ 0.025 Ω	-	≒ 1.25 Ω
Power (CP)	-	≒ 200W	-	≒ 100W	-	≒ 300W	-	≒ 300W
Input Resistance (Load Off)	100k Ω (Typical)		100k Ω (Typical)		100k Ω (Typical)		100k Ω (Typical)	
Temperature Coefficient	100PPM/°C (Typical)		100PPM/°C (Typical)		100PPM/°C (Typical)		100PPM/°C (Typical)	
Power	Supply from 6334A Mainframe		Supply from 6334A Mainframe		Supply from 6334A Mainframe		Supply from 6334A Mainframe	
Dimension (H x W x D)	172x82x489.5mm / 6.8x3.2x19.3inch		172x82x489.5mm / 6.8x3.2x19.3inch		172x82x489.5mm / 6.8x3.2x19.3inch		172x82x489.5mm / 6.8x3.2x19.3inch	
Weight	4.2 kg / 9.3 lbs		4.2 kg / 9.3 lbs		4.2 kg / 9.3 lbs		4.2 kg / 9.3 lbs	
Operating Range	0-40°C		0-40°C		0-40°C		0-40°C	
EMC & Safety	CE		CE		CE		CE	

High Speed DC Electronic Load

Model No.

6330A Series

SPECIFICATIONS-2												
Model	63306A		63307A (30W & 250W)			63308A		63312A		63323A		
Power	60W	600W	30W	30W	250W	60W	600W	120W	1200W	350W		
Current	0-12A	0-120A	0-5A	0-4A	0-40A	0-2A	0-20A	0-24A	0-240A	0-6A	0-60A	
Voltage*3	0-80V		0-80V			0-500V		0-80V		0-80V		
Min. Operation Voltage (DC) *1 (Typical)	0.4V@6A	0.4V@60A	0.4V@2.5A	0.4V@2A	0.4V@20A	1.0V@1A	1.0V@10A	0.4V@12A	0.4V@120A	0.2V @ 3A	0.2V @ 30A	
	0.8V@12A	0.8V@120A	0.8V@5A	0.8V@4A	0.8V@40A	2V@2A	2V@20A	0.8V@24A	0.8V@240A	0.4V @ 6A	0.4V @ 60A	
Constant Current Mode												
Range	0-12A	0-120A	0-5A	0-4A	0-40A	0-2A	0-20A	0-24A	0-240A	0-6A	0-60A	
Resolution	3mA	30mA	1.25mA	1mA	10mA	0.5mA	5mA	6mA	60mA	0.5mA	5mA	
Accuracy	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.1%F.S.	0.1%+0.2%F.S.	
Constant Resistance Mode												
Range	12.5mΩ - 50Ω (600W/16V) 0.625Ω - 2.5kΩ (600W/80V)		0.3Ω - 1.2kΩ (30W/16V) 15Ω - 60kΩ (30W/80V)		0.0375Ω - 150Ω (250W/16V) 1.875Ω - 7.5kΩ (250W/80V)		0.625Ω - 2.5kΩ (600W/125V) 25Ω - 100kΩ (600W/500V)		6.25mΩ - 25Ω (1200W/16V) 0.3125Ω - 1.25kΩ (1200W/80V)		0.01Ω - 100Ω (350W/16V)*4 1.25Ω - 12.5kΩ (350W/80V)	
Resolution	20m mho (600W/16V) 400μ mho (600W/80V)		833μ mho (30W/16V) 16.67μ mho (30W/80V)		6.667μ mho (250W/16V) 133μ mho (250W/80V)		40μ mho (600W/125V) 10μ mho (600W/500V)		40m mho (1200W/16V) 80μ mho (1200W/80V)		6.25m mho (350W/16V)*4 50μ mho (350W/80V)	
Accuracy	50Ω : 0.4mho + 0.5% 2.5kΩ : 0.04mho + 0.2%		1.2kΩ : 0.1mho + 0.2% 60kΩ : 0.01mho + 0.1%		150Ω : 0.1mho + 0.2% 7.5kΩ : 0.01mho + 0.1%		25kΩ : 50m mho + 0.2% 100kΩ : 5m mho + 0.1%		25Ω : 0.8mho + 0.2% 1.25kΩ : 0.08mho + 0.2%		100Ω : 0.1mho + 0.2% *4 12.5kΩ : 0.01mho + 0.1%	
Constant Voltage Mode												
Range	0-80V		0-80V			0-500V		0-80V		0-80V		
Resolution	20mV		20mV			125mV		20mV		5mV		
Accuracy	0.05% ± 0.1%F.S.		0.05% ± 0.1%F.S.			0.05% ± 0.1%F.S.		0.05% ± 0.1%F.S.		0.05% ± 0.1%F.S.		
Constant Power Mode												
Range	0-60W	0-600W	0-30W	0-30W	0-250W	0-60W	0-600W	0-120W	0-1200W	0-35W	0-350W	
Resolution	15mW	150mW	7.5mW	7.5mW	62.5mW	15mW	150mW	30mW	300mW	2.5mW	25mW	
Accuracy	0.5% ± 0.5%F.S.		0.5% ± 0.5%F.S.			0.5% ± 0.5%F.S.		0.5% ± 0.5%F.S.		0.5% ± 0.5%F.S.		
Dynamic Mode												
Dynamic Mode	C.C. Mode		C.C. Mode			C.C. Mode		C.C. Mode		C.C. MODE		
T1 & T2	0.025ms ~ 50ms / Res: 5μs 0.1ms ~ 500ms / Res: 25μs 10ms ~ 50s / Res: 2.5ms		0.025ms ~ 50ms / Res: 5μs 0.1ms ~ 500ms / Res: 25μs 10ms ~ 50s / Res: 2.5ms			0.025ms ~ 50ms / Res: 5μs 0.1ms ~ 500ms / Res: 25μs 10ms ~ 50s / Res: 2.5ms		0.025ms ~ 50ms / Res: 5μs 0.1ms ~ 500ms / Res: 25μs 10ms ~ 50s / Res: 2.5ms		.025ms~50ms/Res: 5μs 0.1ms~500ms / Res: 25μs 10ms~50s / Res: 2.5ms		
Accuracy	1μs/1ms+100ppm		1μs/1ms+100ppm			1μs/1ms+100ppm		1μs/1ms+100ppm		1μs/1ms+100ppm		
Slew Rate	0.002-0.5A/μs		0.64-160mA/μs			0.32-80mA/μs		0.004-1A/μs		0.001-0.25A/μs		
Resolution	0.002A/μs		0.8mA/μs			0.32mA/μs		0.004A/μs		0.001A/μs		
Min. Rise Time	10μs (Typical)		10μs (Typical)			24μs (Typical)		10μs (Typical)		10μs (Typical)		
Current	0-12A	0-120A	0-5A	0-4A	0-40A	0-2A	0-20A	0-24A	0-240A	0-6A	0-60A	
Resolution	3mA	30mA	1.25mA	1mA	10mA	0.5mA	5mA	6mA	60mA	0.5mA	5mA	
Current Accuracy	0.4%F.S.		0.4%F.S.			0.4%F.S.		0.4%F.S.		0.4% F.S.		
Measurement Section												
Voltage Read Back												
Range	0-16V	0-80V	0-16V	0-80V	0-16V	0-80V	0-125V	0-500V	0-16V	0-80V	0-16V	0-80V
Resolution	0.25mV	1.25mV	0.25mV	1.25mV	0.25mV	1.25mV	2mV	8mV	0.25mV	1.25mV	0.25mV	1.25mV
Accuracy	0.025% + 0.025%F.S.		0.025% + 0.025%F.S.			0.025% + 0.025%F.S.		0.025% + 0.025%F.S.		0.025%+0.025% F.S.		
Current Read Back												
Range	0-12A	0-120A	0-5A	0-4A	0-40A	0-2A	0-20A	0-24A	0-240A	0-6A	0-60A	
Resolution	0.1875mA	1.875mA	0.078125mA	0.0625mA	0.625mA	0.03125mA	0.3125mA	0.375mA	3.75mA	0.09375mA	0.9375mA	
Accuracy	0.05% + 0.05%F.S.		0.05% + 0.05%F.S.			0.05% + 0.05%F.S.		0.075% + 0.075%F.S.		0.05%+0.05% F.S.		
Power Read Back*2												
Range	0-60W	0-600W	0-30W	0-30W	0-250W	0-60W	0-600W	0-120W	0-1200W	0-35W	0-350W	
Accuracy	0.1% + 0.1%F.S.		0.1% + 0.1%F.S.			0.1% + 0.1%F.S.		0.1% + 0.1%F.S.		0.1%+0.1% F.S.		
Protective Section												
Over Power Protection	≒ 62.4W	≒ 624W	≒ 31.2W	≒ 31.2W	≒ 260W	≒ 62.4W	≒ 624W	≒ 124.8W	≒ 1248W	≒ 36W	≒ 360W	
Over Current Protection	≒ 12.24A	≒ 122.4A	≒ 5.1A	≒ 4.08A	≒ 40.8A	≒ 2.04A	≒ 20.4A	≒ 24.48A	≒ 244.8A	≒ 6.12A	≒ 61.2A	
Over Temperature Protection	≒ 85°C		≒ 85°C			≒ 85°C		≒ 85°C		≒ 85°C		
Over Voltage Alarm*3	≒ 81.6V		≒ 81.6V			≒ 510V		≒ 81.6V		≒ 81.6V		
General												
Short Circuit												
Current (CC)	-	≒ 120A	-	-	≒ 40A	-	≒ 20A	-	≒ 240A	-	≒ 60A	
Voltage (CV)	-	0V	-	-	0V	-	0V	-	0V	-	0V	
Resistance (CR)	-	≒ 0.0125Ω	-	-	≒ 0.0375Ω	-	≒ 0.625Ω	-	≒ 0.00625Ω	-	≒ 0.01Ω	
Power (CP)	-	≒ 600W	-	-	≒ 250W	-	≒ 600W	-	≒ 1200W	-	≒ 350W	
Input Resistance (Load Off)	100kΩ (Typical)		100kΩ (Typical)			100kΩ (Typical)		100kΩ (Typical)		800kΩ		
Temperature Coefficient	100PPM/°C (Typical)		100PPM/°C (Typical)			100PPM/°C (Typical)		100PPM/°C (Typical)		100PPM/°C (Typical)		
Power	Supply from 6334A Mainframe		Supply from 6334A Mainframe			Supply from 6334A Mainframe		Supply from 6334A Mainframe		Supply from 6334A Mainframe		
Dimension (HxWxD)	172x164x489.5mm / 6.8x6.5x19.3inch		172x82x489.5mm / 6.8x3.2x19.3inch			172x164x489.5mm / 6.8x6.5x19.3inch		172x329x495mm / 6.8x12.9x19.5inch		172x82x489.5mm / 6.8x3.2x19.3inch		
Weight	7.3 kg / 16.1 lbs		4.5 kg / 9.9 lbs			7.3 kg / 16.1 lbs		14 kg / 30.8 lbs		4.2kg / 9.3 lbs		
Operating Range	0-40°C		0-40°C			0-40°C		0-40°C		0-40°C		
EMC & Safety	CE		CE			CE		CE		CE		

NOTE*1 : Low voltage operation, under 0.8 volt, is possible at correspondingly reduced current level. Operating temperature range is 0°C to 40°C. All specifications apply for 25°C ± 5°C, except as noted

NOTE*2 : Power F.S.=Vrange F.S. x Irange F.S.

NOTE*3 : When the operating voltage exceeds the rated voltage for 1.02 times, a warning will occur and if it exceeds 1.1 times of the rated voltage, it would cause permanent damage to the device.

NOTE*4 : Please refer to user's manual for detail specifications.

Mainframe Model	6332A	6334A
Dimension (HxWxD)	194x275x550mm / 7.6x10.8x21.7inch	194x439x550mm / 7.6x17.3x21.7inch
Weight	15 kg / 33.1 lbs	21.5 kg / 47.4 lbs