

## AFFORDABLE AC POWER

- **High Power, Low Cost.**  
*Affordable solution for AC power tests*
- **3000 to 15000 VA Output Power**  
*Capable of handling a wide range of applications*
- **Higher Power Density**  
*Unprecedented power in just 7" (178 mm) cabinet height requires less rack space*
- **Multiple Chassis Configurations**  
*For higher power 1Ø & 3Ø applications to 15 kVA*
- **High Crest Factor Capability**  
*Drives a wide variety of non-linear loads*
- **Light Weight Design**  
*Easy to move around the lab or for mobile applications*

## AC Power Systems iM Series



### Compact AC Power

The 5001iM combines the essential variable frequency, voltage, and current functions in a small and light weight AC power source. By focusing on the key AC power requirements for commercial and industrial applications, the 5001iM is ideally suited as a general purpose AC power source for both development and manufacturing applications. At only 7" (17.8 mm) high and 60 lbs. (27.3 kg), the 5001iM is one of the highest power density, lowest weight AC power sources available today. With a rated output level of 5000 VA, the 5001iM has the power to drive a wide variety of tough loads. A 3000 VA version, model 3001iM is available to accommodate single phase line input requirements.

### Easy To Use Controls

Traditional rotary controls provide precise control of voltage, frequency, and current limit. Voltage and current limit are adjusted by analog potentiometers, while frequency is

set on rotary decade switches for absolute precision. Two voltage ranges, 135 V<sub>RMS</sub> and 270 V<sub>RMS</sub>, provide maximum current output capability for both domestic and foreign applications. These voltage ranges allow for 120 V + 10% and 240 V + 10% high limit testing.

Manual front-panel controls make setting of output voltage and frequency extremely easy. The digital panel meter displays the measured output voltage, while the rotary decade frequency selection switches have a direct viewing feature. The output frequency can be set between 16 and 500 Hz using three 10 digit rotary controls. Slewing voltage is easily accomplished with the instantaneous amplitude control located on the front panel.

An output relay, controlled by a front panel output on/off switch, allows AC power to the load to be turned on and off quickly without changing the voltage setting. All front panel toggle switches have a locking feature to prevent accidental operation.

### Applications

Many AC power applications do not require the complexity and cost of fully programmable AC sources. The 5001iM was designed specifically for those situations where fixed or easily adjustable manual controls are preferable. Typical applications include production testing, quality control and aircraft power simulation. Furthermore, with its easy controls, the 5001iM is suitable for use by personnel with a variety of skill levels.

### Product Evaluation and Test Applications

Increasingly, manufacturers of electronic equipment and appliances are required to fully evaluate and test their products over a wide range of input line conditions. With its small size, high output power, and light weight, the 5001iM provides an excellent stable and controllable AC supply for design verification and product test applications.

## Avionics Applications

As an affordable and reliable source of 400 Hz AC power, the 5001iM is well suited for aerospace applications. Precise frequency control and accurate load regulation are practical features in these applications. The small size and low weight make the 5001iM the perfect frequency changer for workshop or field applications.

For applications that require remote control, refer to the "5001iX Series programmable AC power systems" data sheet.

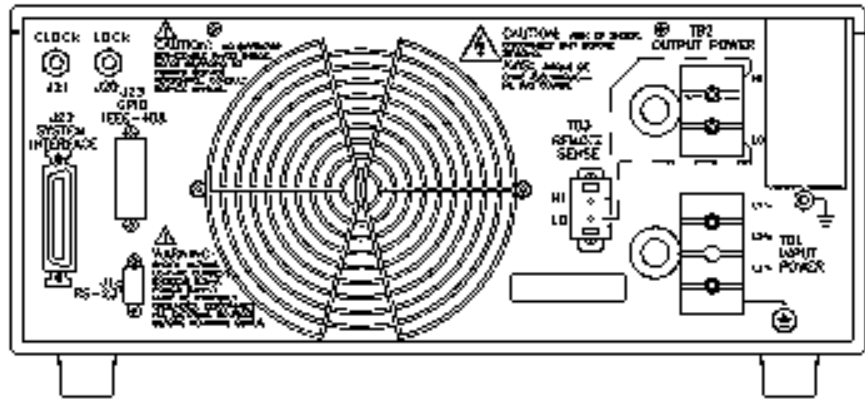
## Versatility

### High Crest Factor

With a crest factor of up to 5:1 the 5001iM can drive non-linear loads with ease. Since many modern products use switching power supplies, they have a tendency to pull high repetitive peak currents. If the AC power source used to test these products has insufficient peak current drive capability, the waveform exhibits voltage harmonic distortion. The 5001iM can deliver up to 110 Amps of peak current.

### Multiphase Configurations

Three 5001iM chassis can be configured as a three phase 15 kVA system using Clock and Lock mode of operation. The master chassis maintains the correct phase and amplitude relationships. This configuration generates up to 234 V (L-L) with RMS phase currents of 21.2A., or 468 V (L-L) with RMS phase currents of 10.6 A.



5001iM rear panel and location of connectors

## Parallel Operation for Higher Output Power

For higher power single-phase applications, up to three 5001iM units can be used in parallel mode using the systems interface connector. A unique load sharing circuit ensures that the load current of up to 111 A RMS (135 V range) is shared between the three chassis.

## Low Cost of Ownership

Through the use of modular construction and quality components, the Model 5001iM is designed to provide many years of uninterrupted service. The modular construction allows components or subassemblies to be replaced quickly to minimize downtime.

## Quiet Operation

Load sensitive fan control assures quiet operation when possible yet ensures adequate cooling when required. Audible noise levels are less than 65 dB within one meter when the load is less than 50% of maximum and at low frequency. This is particularly important for frequency changer applications in an office or commercial environment.

## Safety

### Load Protection

The 5001iM has been designed to protect the unit under test. A current limit control on the front panel allows the output current to be limited to a preset level between 0 % and 100 % of the maximum rated RMS current. The 5001iM will enter into a constant current mode when the output current exceeds the preset current limit. This constant current mode allows the 5001iM to be used for starting up loads such as electric motors that require a high inrush current for relatively long periods.

### Load Regulation

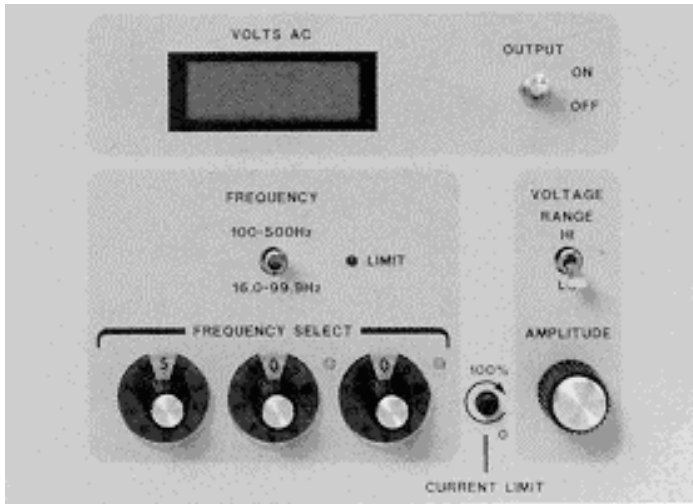
Output voltage regulation is less than 1% with fast response to changes in load impedance, ensuring constant voltage levels to drive your loads.

### Input Protection

A multi-phase input circuit breaker protects the 5001iM from both input overvoltage and overcurrent situations. Electronic input voltage surge protection is also provided. Additionally the unit will shut off when the internal temperature exceeds a preset limit. Recovery from over temperature conditions is fully automatic.

## California Instruments

**Total Customer Satisfaction** is the goal of all California Instruments' employees. It is the driving force behind everything we do. This not only affects the product that you purchase from California Instruments, but everything about your interface with the company. Our applications engineers are ready to assist you with your AC power application. With over 35 years of experience designing and building precision AC power supplies, chances are we can meet your needs and exceed your expectations. The same dedication to customer satisfaction you will find in our applications group also permeates our modern manufacturing facility where our products are carefully built. No unit leaves our factory without being thoroughly tested to ensure quality, reliability and conformance to specifications.



Close up of front panel controls

## Specifications

### Output

#### Power

Model	Power	#Phs	Cbn
3001iM	3 kVA	1	1
5001iM	5 kVA	1	1
10001iM	10 kVA	1	2
15001iM	15 kVA	1	3
15003iM	15 kVA	3	3

#### Power Factor

0 to unity at full output power

#### Voltage Ranges

0-135 Volt RMS

0-270 Volt RMS

#### Voltage Range Selection

Manual switch

#### Digital Volt Meter

3½ Digit LCD readout of output voltage when output is enabled.

Panel meter accuracy 2 %

#### Voltage Resolution

Continuously variable

#### Load Regulation

Less than ± 1%

#### DC Offset

Less than 50 mV

(into resistive or symmetrical load)

#### Frequency Range

16 Hz - 500 Hz

#### Frequency Resolution

0.1 Hz from 16 Hz to 99.9 Hz

1 Hz from 100 Hz to 500 Hz

#### Frequency Accuracy

0.01%

#### Steady State Current Capability

See Output Current table

#### Output Current Derating

See current derating chart

#### Peak Repetitive Current

See Output Current table

#### Crest Factor

Up to 5:1

#### Current Limit

Adjustable set point between 0 and 100 % of maximum RMS current

#### Output Noise

400 mV RMS @ 0-135 V range

800 mV RMS @ 0-270 V range (from 20 kHz to 1 MHz)

#### Harmonic Distortion

1% max linear load @ 50/60 Hz

2% max linear load @ 400 Hz

#### Isolation Voltage

1350 VAC output to chassis

#### Output Relay

Switch controlled output relay

### Input

#### Voltage

Standard: (except 3001iM)

208-240 VAC ± 10%,  
(L-L, 3 Phase)

#### Output Current by model

Model	Low V range		HighV range	
	A <sub>RMS</sub>	A <sub>peak</sub>	A <sub>RMS</sub>	A <sub>peak</sub>
3001iM	22	110	11	92
5001iM	37	110	18.5	92
10001iM	74	220	37	184
15001iM	111	330	55.5	276
15003iM	37/ø	110/ø	18.5/ø	92/ø

#### Option -400:

400-480 VAC ± 10%

(L-L, 3 Phase)

#### Model 3001iM only:

208-240 VAC ± 10%

(L-N, 1 Phase)

(Input range must be specified when ordering)

#### Line Current (per phase)

24 Amps max @ 208-240 V

12 Amps max @ 400-480 V

#### Inrush Current

< 100 A<sub>peak</sub> for 0.1 ms

@ 208-240 V

< 50 A<sub>peak</sub> for 0.1 ms

@ 400-480 V

#### Line Frequency

45 - 66 Hz

#### Efficiency

82% typical

#### Power Factor

0.8 typical

#### Hold-up Time

Greater than 15 ms

#### Isolation

2200 VAC input to output

1350 VAC input to chassis

### Protection

#### Output Overcurrent

Selectable current limit

Constant current mode

#### Short Circuit

Fold back with automatic recovery

#### Input Overcurrent

Front-panel circuit breaker trips

#### Input Overvoltage

Front-panel circuit breaker trips

#### Over Temperature

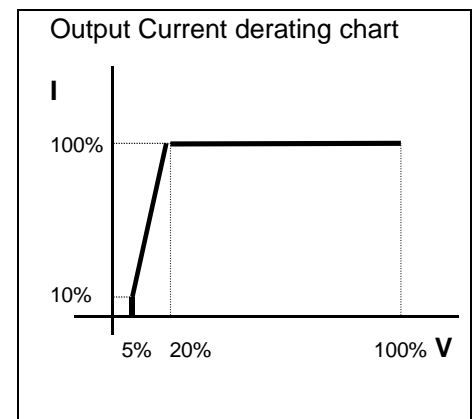
Automatic shutdown and recovery

#### Designed to Meet :

UL3111, EN58001-2, EN58002-2,

EN61010 (CE-Mark equivalent),

CSA22.2



## Physical

### Dimensions

Height : 7" (177.8 mm)  
 Width : 19" (482.6 mm)  
 Depth : 24" (609.6 mm)  
 (Depth includes rear panel connectors)

### Weight

61 lbs. / 28 Kg net.

### Vibration and Shock

Designed to meet NISTA standards

### Air Intake/Exhaust

Forced air cooling, side air intake, rear exhaust

### Operating Temperature

0 to 40° C

### Storage Temperature

-20 to +70° C

### Acoustic Noise at 1 meters

65 dbA max. below 50% of full load, low frequency  
 75 dbA max. above 50% of full load, high frequency

## Ordering Information

Model	Output Power	Output Phases	Input Voltage
3001iM	3 kVA	1	208-240V L-N 1Ø
5001iM	5 kVA	1	208-240V L-L 3Ø
5001iM-400	5 kVA	1	400-480V L-L 3Ø
10001iM (1)	10 kVA	1	208-240V L-L 3Ø
10001iM-400 (1)	10 kVA	1	400-480V L-L 3Ø
15001iM (1)	15 kVA	1	208-240V L-L 3Ø
15001iM-400 (1)	15 kVA	1	400-480V L-L 3Ø
15003iM (2)	15 kVA	3	208-240V L-L 3Ø
15003i M-400 (2)	15 kVA	3	400-480V L-L 3Ø

Note (1): Supplied with System Interface cable(s). Controller in master unit only.  
 Note (2): Supplied with Clock and Lock cables. One controller per phase.

### Connectors

- Three phase AC Input terminal block with cover
- Single phase AC output terminal block with cover
- CI Unit Interface connector\*
- Clock and Lock BNC (2) connectors
- Remote voltage sense terminal block  
 (\* Mating connector supplied)

### Model

Refer to table shown for model numbers and configurations.

### Supplied with

User Manual.

### Options

- RPV Remote voltage programming input, 0-10 VDC. (Not available on CE marked models.)
  - HDK front panel Handle Kit
  - RMK Rack Mount Kit
  - RMS Rackmount Slides
- Note: Option -HDK and -RMK are mutually exclusive. Option -HDK handles do not provide rack mounts ears and are for bench use only. Order -RMK for rack mounted applications.

### CE Mark

All -400 models and model 3001iM are CE marked

### Terms:

Net 30 days on approved credit

### Delivery

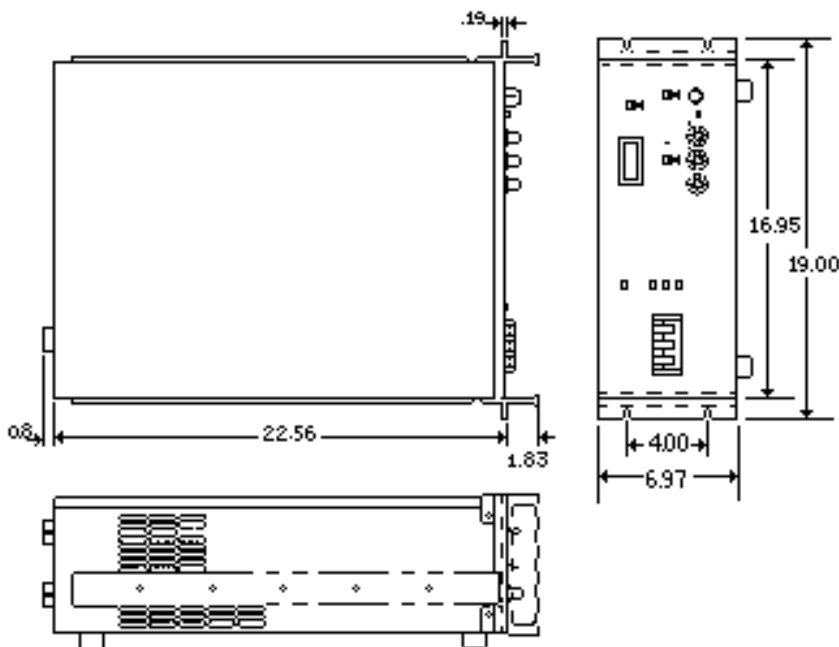
30 days ARO

### Shipment

F.O.B. San Diego CA, freight collect.

### Customer Support

For technical support and service, or to discuss your AC power application needs, contact California Instruments Corp. at (619) 279-8620 or your local representative.



Dimension Drawing

**Contact California Instruments:**  
**Toll-Free: 800-4AC-POWER**  
**800-422-7693**  
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