

California Instruments i/iX Series II

3000–15000 VA

General purpose AC power sources

150–300 V

- Combination AC and DC Power Source and Power Analyzer
- 3000 VA - 15000 VA of Output Power
- Arbitrary Waveform Generation
- Built-in Digital Power Analyzer
- Scope Capture Capability
- EN61000-3-2 and EN61000-3-3
- Powerful Programming Software
- Constant Power Mode



0–120 A

| | | | |
|---|-----|-----|-----|
| ⚡ | 208 | 230 | 400 |
| ~ | 208 | 230 | |

ETHERNET   RS232

Integrated System

The iX Series II represents a new generation of AC and DC power source that addresses increasing demands on test equipment to perform more functions at a lower cost. By combining a flexible AC/DC power source with a high performance power analyzer, the iX Series II systems are capable of handling complex applications that have traditionally required multiple instruments.

The sleek integrated approach of the iX Series II avoids the cable clutter that is commonly found in AC test systems. The i/iX Series II is rackmountable with a 4U chassis design. All connections are made internally and the need for external digital multimeters, power harmonics analyzer and current shunts or clamps is completely eliminated.

Using a state of the art digital signal processor in conjunction with precision high resolution A/D converters, the iX Series II provides more accuracy and resolution than can be found in some dedicated harmonic power analyzers. Since many components in the iX Series II are shared between the AC/DC source and the power analyzer, the total cost of the integrated system is less than the typical cost of a multiple unit system.

For less demanding applications, the i Series II provides similar output and transient capabilities as the iX Series II, as well as basic measurements.

Easy To Use Controls

Both the iX Series II and i Series II are microprocessor controlled and can be operated from an easy to use front panel keypad. Functions are grouped logically and are directly accessible from the keypad. This eliminates the need to search through various levels of menus and/or soft keys. A large analog control knob can be used to quickly slew output parameters. This

knob is controlled by a dynamic rate change algorithm that combines the benefits of precise control over small parameter changes with quick sweeps through the entire range.

Applications

With precise output regulation and accuracy, the iX Series II AC and DC sources address many application areas for AC and DC power testing. The iX also provides a high load current capability, multi or single phase output modes, and built-in power analyzer measurements. Additional features including line distortion simulation (LDS), arbitrary waveform generation, and programmable output impedance address requirements for product quality and regulatory compliance testing.

Product Evaluation and Test

Increasingly, manufacturers of electronic equipment and appliances are required to fully evaluate and test their products over a wide range of input line conditions. The built-in output transient generation and readback measurement capability offers the convenience of an easy to use and integrated test system.

Avionics

With an output frequency range to 1000 Hz, up to 150 VRMS, the iX Series II is well suited for aerospace applications. Precise frequency control and accurate load regulation are key requirements in these applications. The standard IEEE-488 control interface and SCPI command language provide for easy integration into existing ATE systems. Since the iX Series II can eliminate the need for additional pieces of test equipment and only occupies 7 inches of rack space (4U), it significantly saves cost and space. Options are available for popular avionics test routines such as: DO-160, ABD- 0100, MIL-STD-704A-F, Boeing 7E73B-0147, and Airbus test routines.

i/iX Series II

Regulatory Testing

As governments are moving to enforce product quality standards, regulatory compliance testing is becoming a requirement for a growing number of manufacturers. The iX Series II is designed to meet AC source requirements for use in Euronorm EN 61000 compliance testing. For flicker testing, the programmable output impedance capability of the 3001iX, 5001iX and 15003iX can be used to create the required IEC 725 reference impedance. Run IEC61000-4-11, IEC61000-4-14 and IEC61000-4-28 test programs.

Multi-Box Configurations

For high power applications, two or three 5001iX chassis can be combined to provide 10 to 15 kVA of single or three phase power. A 9003iX, 15003iX or 15003i three phase configuration can be ordered with the MODE-iX option. This option allows automatic switching between single or three phase output mode. In single phase mode, all current is available on phase A.

High Crest Factor

With a crest factor of up to 5:1, the iX Series II AC source can drive difficult nonlinear loads with ease. Since many modern products use switching power supplies, they have a tendency to pull high repetitive peak currents. The 5001iX can deliver up to 110 Amps of repetitive peak current to handle such loads.

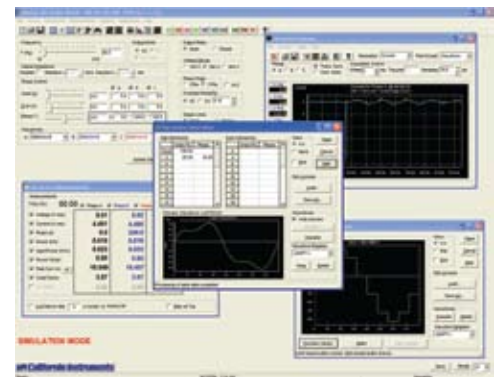
Remote Control

Standard IEEE-488 and RS232C remote control interfaces allow programming of all instrument functions from an external computer. The popular SCPI command protocol is used for programming. Drivers for several popular instrumentation programming environments are available to facilitate systems integration of the iX Series II. Instrument drivers for popular programming environments such as National Instruments LabView™ are available to speed up system intergration.

Application Software

Windows® application software is included with the iX and i Series II¹. This software provides easy access to the power source's capabilities without the need to develop any custom code. The following functions are available through this GUI program:

- Steady state output control (all parameters)
- Create, run, save, reload and print transient programs
- Generate and save harmonic waveforms [iX only]
- Generate and save arbitrary waveforms [iX only]
- Download data from a digital storage oscilloscope [iX only]
- Measure and log standard measurements
- Capture and display output voltage and current waveforms [iX only]
- Measure, display, print and log harmonic voltage and current measurements [iX only]
- Display IEEE-488 or RS232C bus traffic to and from the AC Source to help you develop your own test programs..



1. Requires PC running WindowsXP™ or Windows 2000™

Harmonic Waveform Generation

Using the latest DSP technology, the iX Series II controller is capable of generating harmonic waveforms to test for harmonics susceptibility of a unit under test. Included is a Graphical User Interface program that can be used to define harmonic waveforms by specifying amplitude and phase for up to 50 harmonics. The waveform data points are generated and downloaded by the GUI to the AC source through either the USB, IEEE-488, RS232C bus or LAN and remain in nonvolatile memory. Up to 200 waveforms can be stored and given a user defined name for easy recall.

The three phase configuration iX Series II offers independent waveform generation on each phase allowing three phase anomalies to be programmed. It also allows simulation of unbalanced harmonic line conditions.



Harmonic waveform, Fund., 3rd, 5th, 7th, 9th, 11th and 13th.



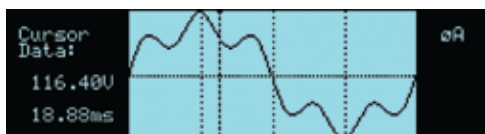
Two hundred user defined waveforms.

Arbitrary Waveform Generation

[iX Series II only]

Using the provided GUI program or custom software, the user also has the ability to define arbitrary AC waveforms. The arbitrary waveform method of data entry provides an alternative method of specifying AC anomalies by providing specific waveform data points. The GUI program includes a catalog of custom waveforms. It also allows real-world waveforms captured on a digital oscilloscope to be downloaded to one of the many AC source's waveform memories.

Arbitrary waveform capability is a flexible way of simulating the effect of real-world AC power line conditions in both engineering and production environments.



Two hundred user defined waveforms.

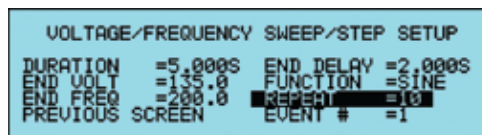
iX and i Series II -

AC and DC Transient Generation

The iX and i Series II controllers have a powerful AC and DC transient generation system that allows complex sequences of voltage, frequency and waveshapes to be generated. This further enhances the i/iX's capability to simulate AC line conditions or DC disturbances. When combined with the multi phase arbitrary waveform capabilities, the AC and DC output possibilities are truly exceptional. In three phase i/iX system configurations, transient generation is controlled independently yet time synchronized on all three phases. Accurate phase angle control and synchronized transient list execution provide unparalleled accuracy in positioning AC output events.

Transient programming is easily accomplished from the front panel where clearly laid out menu's guide the user through the transient definition process. The front panel provides a convenient listing of the programmed transient sequence and allows for transient execution, Start, Stop, Abort and Resume operations.

User defined transient sequences can be saved to nonvolatile memory for instant recall and execution at a later time. The included Graphical User Interface program supports transient definitions using a spreadsheet-like data entry grid. A library of frequently used transient programs can be created on disk using this GUI program.



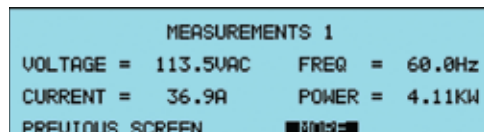
Transient List Data Entry from the front panel



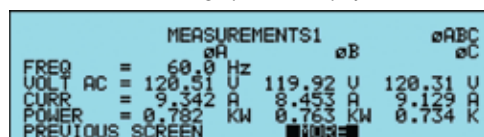
Transient List Data Entry in GUI program.

Measurement and Analysis

The i/iX Series II is much more than a programmable AC and DC power source. It also incorporates an advanced digital signal processor based data acquisition system that continuously monitors all AC source and load parameters. This data acquisition system forms the basis for all measurement and analysis functions. These functions are accessible from the front panel and the remote control interface.



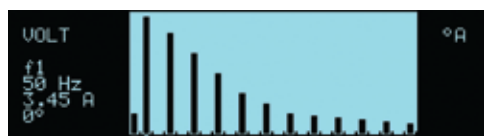
Measurement data for single phase (iX Display).



Measurement data for all three phases (iX Display).

Harmonic Analysis [iX Series II only]

The iX Series II provides detailed amplitude and phase information on up to 50 harmonics of the fundamental voltage and current for either one or three phases. Harmonic content can be displayed in both tabular and graphical formats on the front panel LCD for immediate feedback to the operator. Alternatively, the included GUI program can be used to display, print and save harmonic measurement data. Total harmonic distortion of both voltage and current is calculated from the harmonic data.



Absolute amplitude bar graph display of current harmonics with cursor positioned at the fundamental (iX Display).

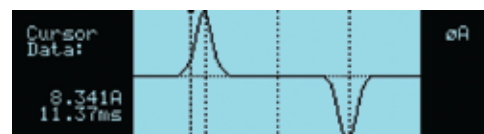
| HR# | AMPL. | PHASE | HR# | AMPL. | PHASE |
|-----|-------|-------|-----|--------|-------|
| 0 | 0.00 | 0.0 | 1 | 151.42 | 0.0 |
| 2 | 0.33 | 46.9 | 3 | 116.17 | 351.4 |
| 4 | 0.57 | 90.1 | 5 | 85.24 | 22.6 |
| 6 | 0.59 | 131.8 | 7 | 54.72 | 67.0 |
| 8 | 0.45 | 171.4 | 9 | 24.55 | 100.6 |

Voltage harmonic measurement table display in absolute values (iX Display).

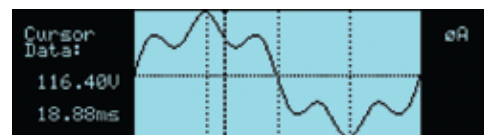
Waveform Acquisition [iX Series II only]

The measurement system is based on real-time digitization of the voltage and current waveforms using a 4K deep sample buffer. This time domain information provides detailed information on both voltage and current waveshapes. Waveform acquisitions can be triggered at a specific phase angle or from a transient program to allow precise positioning of the captured waveform with respect to the AC source output.

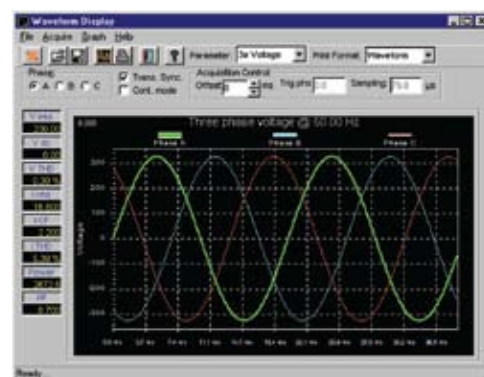
The front panel LCD displays captured waveforms with cursor readouts. The included GUI program also allows acquired waveform data to be displayed, printed and saved to disk.



Acquired Current waveform (iX Display).



Acquired Voltage waveform (iX Display).



Acquired three phase voltage waveforms display on PC.

| Operating Modes | | | | | | | |
|---|---|----------|----------|---------------------------------|--|-----------|--------------------|
| iX Series II | AC, DC or AC+DC | | | | | | |
| i Series II | AC or DC | | | | | | |
| AC Mode Output | | | | | | | |
| Frequency | Range: 16.00-1000 Hz (Note: Voltage on 300 V range derates from 300 Vrms max at 500 Hz to 150 Vrms max at 1000 Hz; See V-F rating chart. below) | | | | | | |
| Total Power | 3001i/iX: 3000 VA, 5001i/iX: 5000 VA, 9003i/iX: 3000 VA per phase, with mode iX: 9000 VA 1 ϕ , 10001i/iX: 10000 VA, 15001i/iX: 15000 VA, 15003i/iX: 5000 VA/ ϕ 3 ϕ , with mode iX: 15000 VA 1 ϕ | | | | | | |
| Load Power Factor | 0 to unity at full output VA | | | | | | |
| AC Mode Voltage | | | | | | | |
| Voltage Ranges | Range | V Low | V High | Load Regulation (with ALC on): | < 0.2% | | |
| | AC | 0-150 V | 0-300 V | Load Regulation (with ALC off): | < 0.5% DC to 100 Hz, < 0.6% 100 Hz to 500 Hz in high voltage range, < 2.2% 100 Hz to 500 Hz in low voltage range, < 3% 500 Hz to 1000 Hz | | |
| | AC+DC | 0-150 V | 0-300 V | Line Regulation: | < 0.1% for 10% line change | | |
| Output Noise (20 kHz to 1 MHz) | < 250 mVrms typ., < 500 mVrms max | | | | | | |
| Harmonic Distortion (Linear) | < 1% from 16 - 66 Hz, < 2% at 400 Hz, < 3% at 800 Hz (Full resistive load) | | | | | | |
| DC Offset | < 20 mV | | | | | | |
| External Amplitude Modulation | Depth: 0 - 10 %, Frequency: DC - 2 KHz | | | | | | |
| Isolation Voltage | 300 Vrms output to chassis | | | | | | |
| Voltage slew rate | 200 μ s for 10% to 90% of full scale change into resistive load, 0.5V / μ Sec | | | | | | |
| AC Mode Current | | | | | | | |
| Steady State AC Current | Model | 3001i/iX | 5001i/iX | 9003i/iX 3 ϕ | 10001i/iX | 15001i/iX | 15003i/iX 3 ϕ |
| | 300 V range | 11.1 | 18.5 | 11.1 / ϕ | 37.0 | 55.5 | 18.5 / ϕ |
| | 150 V range | 22.2 | 37.0 | 22.2 / ϕ | 74.0 | 111.0 | 37.0 / ϕ |
| Note: Constant power mode provides increased current at reduced voltage (See chart below) | | | | | | | |
| Peak Repetitive AC Current | Model | 3001i/iX | 5001i/iX | 9003i/iX 3 ϕ | 10001i/iX | 15001i/iX | 15003i/iX 3 ϕ |
| | High range | 96.0 | 96.0 | 96.0 / ϕ | 192.0 | 288.0 | 96.0 / ϕ |
| | Low range | 110.0 | 110.0 | 110.0 / ϕ | 220.0 | 330.0 | 110.0 / ϕ |
| Programming Accuracy | Voltage (rms): \pm 0.2 of range, 16 to 1000 Hz, Frequency: \pm 0.01 % of programmed value, Current Limit: \pm 0.5 % of programmed value, Phase: < 1.5° with balanced load at 50/60 Hz | | | | | | |
| Programming Resolution | Voltage (rms): 100 mV, Frequency: 0.01 Hz from 16 - 81.91 Hz, 0.1 Hz from 82.0 - 819.1 Hz, 1 Hz from 820-1000 Hz, Current Limit: 0.1 A, Phase, 0.1° | | | | | | |
| Output Relay | Push-button controlled or bus controlled output relay | | | | | | |
| Output Impedance (iX Only) | Programmable Z on 3001iX, 5001iX, 9003iX and 15003iX (3 ϕ mode only) for 50 Hz fundamental | | | | | | |
| Resistive | Range: 17 - 1000 mOhm, resolution: 4 mOhm accuracy, 2 % FS | | | | | | |
| Inductive | Range: 230 - 1000 μ H, resolution: 4 μ H, accuracy: 2 % FS | | | | | | |
| DC Mode Output | | | | | | | |
| Power (Max at full scale of DC Voltage Range): | 3001i/iX: 2100 W, 5001i/iX: 3500 W, 9003i/iX: 2100 W/ ϕ 3 ϕ , 6300 W 1 ϕ , 10001i/iX: 7000 W, 15001i/iX: 10500 W, 15003i/iX: 3500 W/ ϕ 3 ϕ | | | | | | |
| Voltage Ranges | Range: Low: 200 Vdc, High: 400 Vdc | | | | | | |
| Line Regulation | < 0.1% FS or 10% line change | | | | | | |
| Output Noise | < 250 mV rms typ., < 500 mV rms max., (20 kHz to 1 MHz) | | | | | | |
| Max DC Current (Maximum current at 65% of V Range) | Model | 3001i/iX | 5001i/iX | 9003i/iX 3 ϕ | 10001i/iX | 15001i/iX | 15003i/iX 3 ϕ |
| | 400V range | 7.8 | 13 | 7.8 | 26 | 39 | 13 |
| | 200V range | 15.6 | 26 | 15.6 | 52 | 78 | 26 |
| Note: Constant power mode provides increased current at reduced voltage (See chart below) | | | | | | | |
| Current Limit | Programmable from 0 A to maximum current for selected range | | | | | | |
| AC+DC Mode Output | | | | | | | |
| Output Power (iX only) | Full AC Power if DC component is less than 20% of full scale voltage, Full DC power if DC component is above 20% | | | | | | |

i/iX Series : Product Specifications

| Measurements | | |
|--------------------------------|--|--|
| Output Parameter | i Series | iX Series |
| Current Limit Range | Programmable 0 to 100% of range for all ranges | Programmable 0 to 100% of range for all ranges |
| Current Limit Resolution | 0.1 Arms | 0.1 Arms |
| Current Limit Accuracy | ± 0.5 A | ± 0.5 A |
| Frequency Range | 16.00 - 81.91 Hz (0.01 Hz resolution) 81.0 – 819.1 Hz (0.1 Hz resolution) 820 – 1000 Hz (1 Hz resolution) ¹ | 16.00 - 81.91 Hz (0.01 Hz resolution) 81.0 – 819.1 Hz (0.1 Hz resolution) 820 – 1000 Hz (1 Hz resolution) ¹ |
| Frequency Accuracy | ± 0.01% of programmed value | ± 0.01% of programmed value |
| DC Offset Voltage | Less than 20 mV with linear load. | Less than 20 mV with linear load. |
| Output Impedance Range | n/a | Rmin to 1000 mΩ Lmin to 1000 μH |
| Output Impedance Resolution | n/a | 4 mΩ 4 μH |
| Output Impedance Accuracy | n/a | ± 2% F.S. at 796 μH and 400 mΩ |
| Output Noise (20 kHz to 1 MHz) | <250 mV rms (typ), <500 mV rms (max) | <250 mV rms (typ), <500 mV rms (max) |

¹ Note: AC voltage in 300V range derates from 300 Vrms max. at 500 Hz to 150 Vrms max. at 1000 Hz.

| Measurements : Peak AC Current | | |
|--------------------------------|---|---|
| Output Parameter | i Series | iX Series |
| 3001i/iX 5001i/iX | 110 A for 150 V range, 92 A for 300 V range | 110 A for 150V range, 92 A for 300 V range, |
| 10001i/iX | 220 A for 150 V range, 184 A for 300 V range | 220 A for 150 V range, 184 A for 300 V range |
| 15001i/iX | 330 A for 150 V range, 276 A for 300 V range | 330 A for 150 V range, 276 A for 300 V range |
| Crest Factor | Up to 5:1 | Up to 5:1 |

| AC Measurements | | | |
|------------------------|-----------------|--|--|
| Parameter | Range | Accuracy (±) | Resolution |
| Frequency | 16.00 - 1000 Hz | 2 counts | 0.01: 16 to 81.91 Hz 0.1: 82.0 to 819.0 Hz 1: 820 to 1000 Hz |
| RMS Voltage | 0 - 300 Volts | 0.25V + 0.1%, <100 Hz 0.25V + 0.2%, 100-1000 Hz | 0.01 Volt |
| RMS Current | 0 - 40 Amps | 0.25A + 0.1%, <100 Hz 0.25A + 0.2%, 100-1000 Hz | 0.001 Amp |
| Peak Current | 0 - 119 Amps | 0.5A + 0.2%, <100 Hz 0.5A + 0.5%, 100-1000 Hz | 0.01 Amp |
| VA Power | 0 – 6000 VA | 10 VA + 0.1%, <100 Hz 20 VA + 0.2%, 100-1000 Hz | 1 VA |
| Real Power | 0 – 6000 W | 10 W + 0.1%, <100 Hz 20 W + 0.2%, 100-1000 Hz | 1 W |
| Power Factor (>0.2kVA) | 0 - 1.00 | | 0.01 |

Accuracy specifications apply above 100 counts. Current and Power Accuracy specifications are times two for 10001iX and times three for 15001iX. For 10001iX and 15001iX, resolution decreases by factor of 10, ranges for current and power increases by factor of three. Measurement bandwidth is limited to 16 KHz.

| DC Measurements | | | |
|-----------------|---------------|--------------|------------|
| Parameter | Range | Accuracy (±) | Resolution |
| Voltage | 0 – 400 Volts | 0.4 Volts | 0.01 Volt |
| Current | 0 – 40 Amps | 0.1 Amps | 0.001 Amp |
| Power | 0 – 6000 W | 20 W | 1 W |

Accuracy specifications apply above 100 counts. Current and Power Accuracy specifications are times two for 10001iX and times three for 15001iX. For 10001iX and 15001iX, resolution decreases by factor of 10, ranges for current and power increases by factor of three.

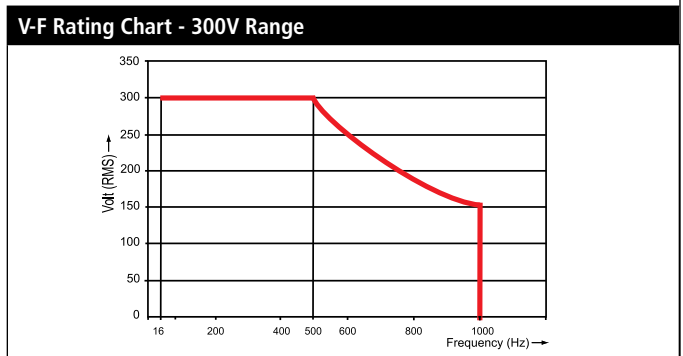
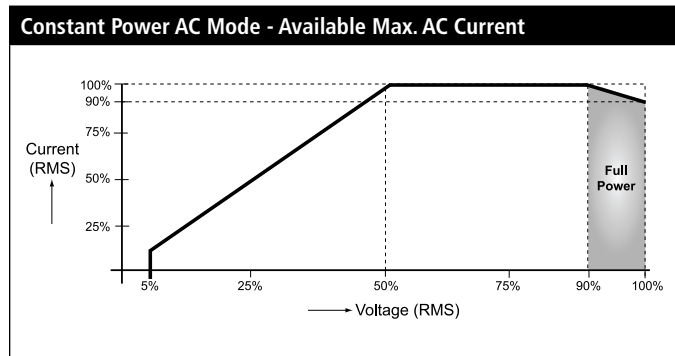
| Harmonic Measurements (iX series) | | | |
|-----------------------------------|-------------------|-------------------------|-----------------|
| Parameter | Range | Accuracy (\pm) | Resolution |
| Frequency fundamental | 16.00 - 1000 Hz | 2 counts | 0.01 Hz to 1 Hz |
| Frequency harmonics | 32.00 Hz - 16 kHz | 2° typ. | 0.5° |
| Voltage | Fundamental | 0.25V | 0.01V |
| | Harmonic 2 - 50 | 0.25V + 0.1% + 0.1%/kHz | 0.01V |
| Current | Fundamental | 0.05A | 0.01A |
| | Harmonic 2 - 50 | 0.05A + 0.1% + 0.1%/kHz | 0.01A |

Accuracy specifications are times three for three phase mode. Harmonics frequency range in three-phase mode is 32 Hz - 16 kHz. Resolution decreases by factor of 10 for 10001iX and 15001iX.

| Remote Control | |
|--|--|
| IEEE-488 Interface optional / USB standard | IEEE-488 (GPIB) talker listener. Subset: AH1, C0, DC1, DT1, L3, PPO, RL2, SH1, SR1, T6, IEEE-488.2 SCPI Syntax (GPIB standard on iX) |
| RS232C Interface (LAN Optional) | 9 pin D-shell connector, Handshake: CTS, RTS, Data bits: 7,8, Stop bits: 1, 2, Baud rate: 9600, 19200, 38400, 57600, 115200, IEEE-488.2 SCPI Syntax (Supplied with RS232C cable). (RS232C Standard on iX - LAN Optional) |

| AC Input | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------|--|----------|----------|-----------|-----------|-----------|-----------|-----------|----------|------|------|------|------|------|------|----------|-----|------|-----|------|------|------|
| Voltage | 3001 and 9003: 208-240 \pm 10% Vac, (L-N, 1 ϕ), All other models: Standard: 208-240 \pm 10% Vac, (L-L, 3 ϕ), Option -400: 400-480 \pm 10% Vac, (L-L, 3 ϕ) (Input range must be specified when ordering). | | | | | | | | | | | | | | | | | | | | | |
| Input Line Current (per phase): | <table border="1"> <thead> <tr> <th>Model</th> <th>3001i/iX</th> <th>5001i/iX</th> <th>9003i/iX</th> <th>10001i/iX</th> <th>15001i/iX</th> <th>15003i/iX</th> </tr> </thead> <tbody> <tr> <td>187-264V</td> <td>25 A</td> <td>23 A</td> <td>75 A</td> <td>46 A</td> <td>69 A</td> <td>69 A</td> </tr> <tr> <td>360-528V</td> <td>N/A</td> <td>12 A</td> <td>N/A</td> <td>24 A</td> <td>36 A</td> <td>36 A</td> </tr> </tbody> </table> | Model | 3001i/iX | 5001i/iX | 9003i/iX | 10001i/iX | 15001i/iX | 15003i/iX | 187-264V | 25 A | 23 A | 75 A | 46 A | 69 A | 69 A | 360-528V | N/A | 12 A | N/A | 24 A | 36 A | 36 A |
| Model | 3001i/iX | 5001i/iX | 9003i/iX | 10001i/iX | 15001i/iX | 15003i/iX | | | | | | | | | | | | | | | | |
| 187-264V | 25 A | 23 A | 75 A | 46 A | 69 A | 69 A | | | | | | | | | | | | | | | | |
| 360-528V | N/A | 12 A | N/A | 24 A | 36 A | 36 A | | | | | | | | | | | | | | | | |
| Inrush Current per chassis | < 100 Apk for 100 μ s at 208-240 V, < 50 Apk for 100 μ s at 400-480 V | | | | | | | | | | | | | | | | | | | | | |
| Line Frequency | 50-60 Hz \pm 10 % | | | | | | | | | | | | | | | | | | | | | |
| Efficiency | 75% typical | | | | | | | | | | | | | | | | | | | | | |
| Power Factor | 0.6 typical | | | | | | | | | | | | | | | | | | | | | |
| Regulatory | IEC61010, EN50081-2, EN50082-2, CE EMC and Safety Mark requirements | | | | | | | | | | | | | | | | | | | | | |
| RFI Suppression | CISPR 11, Group1 , Class A | | | | | | | | | | | | | | | | | | | | | |
| Rear Panel Connectors | AC Input & Output terminal block with cover, IEEE-488 (GPIB) connector (rear panel), 9 pin D-Shell RS232C connector*, Remote voltage sense terminal block, System Interface Connector, *RS232 DB9 to DB9 cable supplied | | | | | | | | | | | | | | | | | | | | | |

| Mechanical | |
|---------------------|--|
| Dimensions | Height: 7" (178 mm), Width: 19" (483 mm), Depth: 24" (610 mm) (depth includes rear panel connectors) |
| Weight | per Chassis: Net: 61 lbs / 28 Kg, Shipping: 115 lbs / 52 Kg |
| Vibration and Shock | Designed to meet NSTA project 1A transportation levels |
| Air Intake/Exhaust | Forced air cooling, side air intake, rear exhaust. |
| Operating Humidity | 0 to 95 % RAH, non condensing. |
| Temperature | Operating: 0 to 40° C, Storage: -20 to +85° C |



Note: Specifications are subject to change without notice. Specifications are warranted over an ambient temperature range of 25 \pm 5° C. Unless otherwise noted, specifications are per phase for a sine wave with a resistive load and apply after a 30 minute warm-up period. For three phase configurations, all specifications are for L-N. Phase angle specifications are valid under balanced load conditions only.

i/iX Series : Product Specifications

| Standard controller versions | | | | | | | |
|------------------------------|-----------------|--------------|------------------------|------|--------------|-----|----------------------------|
| Model | Output Power AC | Phase Output | Max. current per phase | | | | Input Voltage ² |
| | | | Low V range | | High V range | | |
| | | | AC | DC | AC | DC | |
| 3001i/iX | 3 kVA | 1 | 22 | 15.6 | 11 | 7.8 | 208-240V |
| 5001i/iX | 5 kVA | 1 | 37 | 26 | 18.5 | 13 | 208-240V |
| 5001i/iX-400 | 5 kVA | 1 | 37 | 26 | 18.5 | 13 | 400-480V |
| 9003iX1 | 9 kVA | 3 | 22 | 15.6 | 11 | 7.8 | 208-240V |
| 10001i/iX ¹ | 10 kVA | 1 | 74 | 52 | 37 | 26 | 208-240V |
| 10001i/iX-400 ¹ | 10 kVA | 1 | 74 | 52 | 37 | 26 | 400-480V |
| 10002i/iX ³ | 10 kVA | 2 | 37 | 26 | 18.5 | 13 | 208-240V |
| 10002i/iX-400 ³ | 10 kVA | 2 | 37 | 26 | 18.5 | 13 | 400-480V |
| 15001i/iX ¹ | 15 kVA | 1 | 111 | 78 | 55.5 | 39 | 208-240V |
| 15001i/iX-400 ¹ | 15 kVA | 1 | 111 | 78 | 55.5 | 39 | 400-480V |
| 15003i/iX ¹ | 15 kVA | 3 | 37 | 26 | 18.5 | 13 | 208-240V |
| 15003i/iX-400 ¹ | 15 kVA | 3 | 37 | 26 | 18.5 | 13 | 400-480V |

Note (1): Supplied with System Interface cable(s). Controller in master unit only.

Note (2): All input voltage specifications are for Line to Line three phase except 3001iX and 9003iX which require single phase input only.

Note (3): For 10002iX split phase system specifications, refer to 5001iX for each phase.

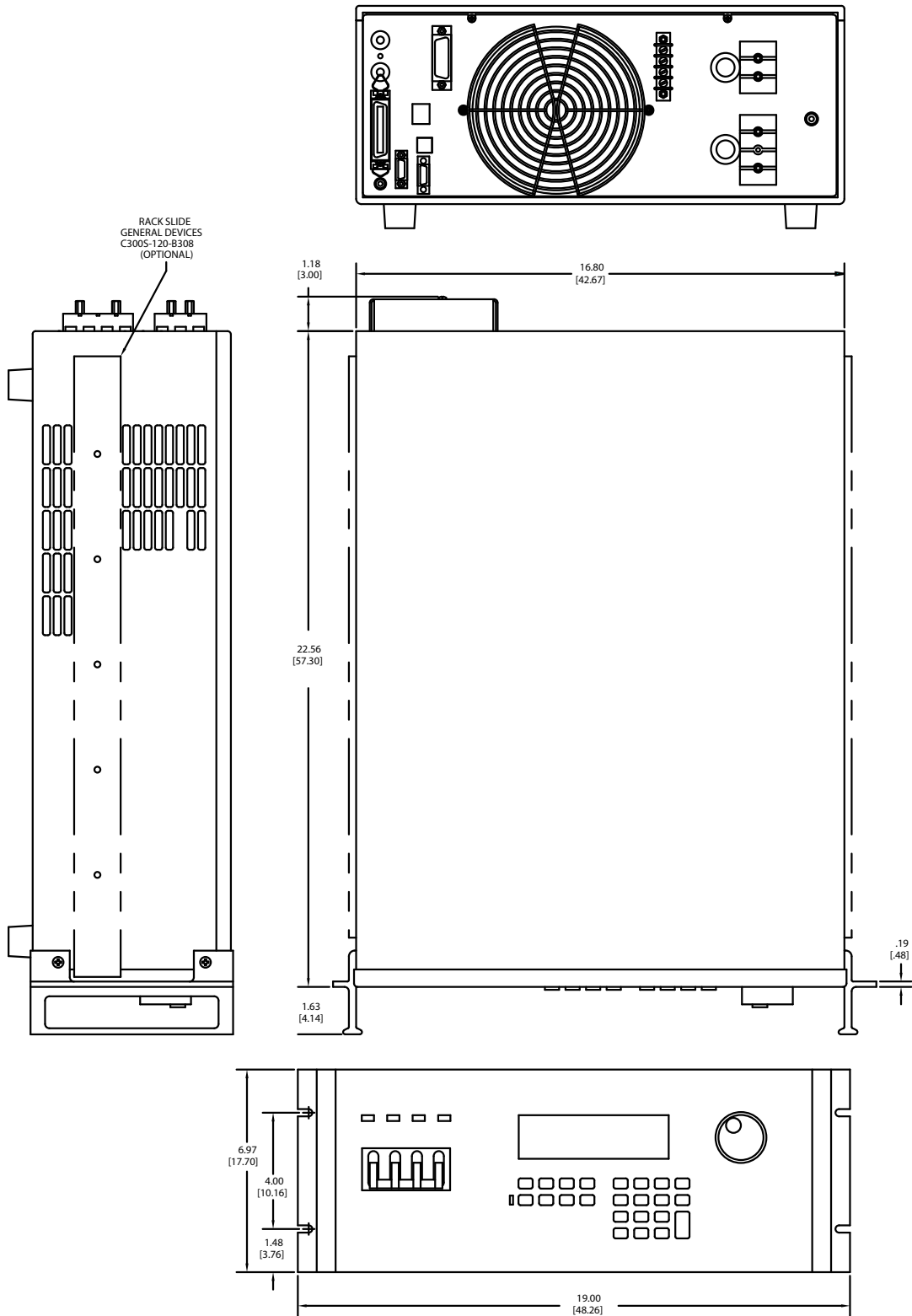
| Controller | | |
|-------------------------|---|----|
| Controller | i | iX |
| AC mode | X | X |
| DC mode | X | X |
| AC+DC mode | | X |
| Transient programming | X | X |
| Arbitrary waveforms | | X |
| Measurements (standard) | X | X |
| Harmonic measurements | | X |
| Waveform acquisition | | X |
| Programmable Impedance | | X |
| IEEE / RS232 / USB | X | X |

| Storage | |
|---------------------------|--|
| Non Volatile Mem. storage | 16 instrument setups, 200 user defined waveforms |

| Waveforms | |
|-------------------------------|--|
| Waveform Types | i Series II: Sine, iX Series II: Sine, Square, Clipped sine, User defined |
| User defined waveform storage | Four groups of 50 user defined arbitrary waveforms of 1024 points for a total of 200 (One group can be active at a time) |

| System Interface | |
|------------------|---|
| Inputs | Remote shutdown, External Sync, Clock/Lock (option) |
| Outputs | Function Strobe, Clock/Lock (option) |

| Protection | |
|------------------|---|
| Over Load | Constant Current or Constant Voltage mode |
| Over Temperature | Automatic shutdown |



i/iX Series

Supplied with

User Manual, Programming Manual, Software (all on CD ROM) and RS232C serial cable.

Options

| Option Code | Description |
|-------------|---|
| -160 | RTCA/DO-160D and EUROCAE test firmware. Refer to -160 option data sheet for details. |
| -400 | 400-480 Volt Line to Line AC input. |
| -411 | IEC61000-4-11 test firmware. See also EOS1/3. |
| -413 | IEC61000-4-13 Harmonics and Interharmonics test firmware and hardware. |
| -704 | Mil Std 704D/E test firmware. Refer to -704 option data sheet for details. 704F Software |
| -EOS-1 | IEC61000-4-11 Electronic Output Switch (1 phase) Includes -411 option. Refer to EOS data sheet for details. |
| -EOS-3 | IEC61000-4-11 Electronic Output Switch (3 phase) Includes -411 option. Refer to EOS data sheet for details. |
| -LKM | Clock/Lock Master |
| -LKS | Clock/Lock Auxiliary |
| -LNS | Internal AC Line Sync. |
| -XLS | External AC Line Sync adaptor. (-LNS and XLS are mutually exclusive) |
| -MODE-iX | Switches between 1 and 3 phase output modes, for 9003iX or 15003i/iX only. (Separate box) |
| OMNI-1-18i | Impedance matching network for single phase 3001i/iX or 5001i/iX to support IEC-1000-3-3 flicker tests. |
| OMNI-3-18i | Impedance matching network for three phase 9003iX or 15003i/iX systems to support IEC-1000-3-3 flicker tests. |
| OMNI-3-37i | Impedance matching network for three phase 30003i/iX systems to support IEC-1000-3-3 flicker tests. |
| -RMS | Rackmount Slides. |
| -WHM | Watt-Hour Measurement option. |
| -ABD | Airbus Directive 0100.1.8 tests. |
| -AMD | Airbus AMD24 tests. |
| -A350 | Airbus A350 tests. |
| -AIRB | Airbus test package (A380, A350, AMD24) |
| -B787 | Boeing 787B3-0147 tests. |
| Cabinets | Multi box iX Series II systems can be factory installed and wired in 19 inch cabinets. Cabinet configurations can be ordered by preceeding the model number with a "C1-C4" prefix. Contact factory for pricing and details. |