Models 160AMX-160AMXT

1 or 2Ø – Linear AC Power Source

6,000VA
20-5,000 Hz

1Ø⋯→ 0-338V_{L-N}
2Ø⋯→ 0-600V_{L-L}

Standard Features:

- Advanced Linear Amplifiers Provide Very Low Voltage Distortion, no Switching Noise, Fast Voltage and Current Slew Rates, Exceptionally Low Output Impedance and High Peak Current Capability
- Single or Split phase selectable output from front panel or bus command
- 20 to 5,000 Hz. Full Power Bandwidth Operation – 5Hz to 50KHz small signal bandwidth, 3dB at 10% of full voltage
- Precision Voltage Programming – 0.05% with Continuous Self-Calibration (CSC) engaged
- True-RMS Metering of Volts, Amps, and Power
- GPIB (IEEE-488.2) or RS-232 Interface
- Waveform Library – Arbitrary Waveform Generator
- Up to 99 Programs with Associated Transients for Static and Dynamic Test Applications
- UPC Studio Software Suite

Available Options:

- T-versions include external transformer assembly for higher voltage ranges
- Programmable Output Impedance
- Harmonic Analysis and Waveform Synthesis
- Peak Inrush Capture and Waveform Analysis (Available on models with UPC1controller)
- UPC Test Manager Software

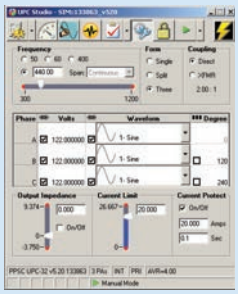
Multi Chassis Systems

Higher power systems available by paralleling 2 or more AMX chassis in Master/Slave configuration. See AMX Parallelable Models data sheet.

UPC Manager Software Suite

Master the Power of the Wave!

UPC Manager Software gives you the tools necessary to quickly and easily operate your AC Power Source. With our graphical interface control all areas of your AC Power Source testing with simple presets, user prompts, test sequences, test plans and custom reports.



Model 160AMX

As a member of Pacific Power's AMX-Series popular family of high performance Linear AC Power Sources, the 160AMX offers the same low output voltage noise and distortion, ease of installation, and high AC waveform fidelity as found in all of Pacific Power's Linear AC Power Sources. Control and operational features provide a high degree of versatility and ease of use for applications ranging from simple, manually controlled frequency conversion to harmonic testing and sophisticated programmable transient simulation.

AC TEST POWER

All 160AMX and 160AMXT models are equipped with a powerful micro-controller with the ability to operate as a fully integrated test system. This enables a variety of power conditions and transients to be applied to the device under test while metering and analyzing all output performance parameters. For higher power requirements, refer to the AMX Parallelable data sheet for multi-chassis system configuration info.

FREQUENCY/ VOLTAGE CONVERSION

The 160AMX is an excellent source of stable AC Voltage over the frequency range of 20 to 5,000 Hz (Direct Coupled Range) or 45 to 5,000 Hz (Transformer Coupled AMXT models) when using the high-end UPC-12 controller. Also available in 1,200 Hz maximum output frequency when using UPC1 or Manual controller. The output frequency is quartz-crystal stabilized. Output voltages up to 135V_{L-N} in single phase mode and up to 270V_{L-L} in split phase mode are available on the 160AMX model and up to 600V_{L-L} in split phase mode on the 160AMXT model.

PHASE CONVERSION

With the ability to provide either single or two phase output, the 160AMX is a good choice to convert three-phase line voltage into precisely controlled split (two-phase) or single-phase output power.

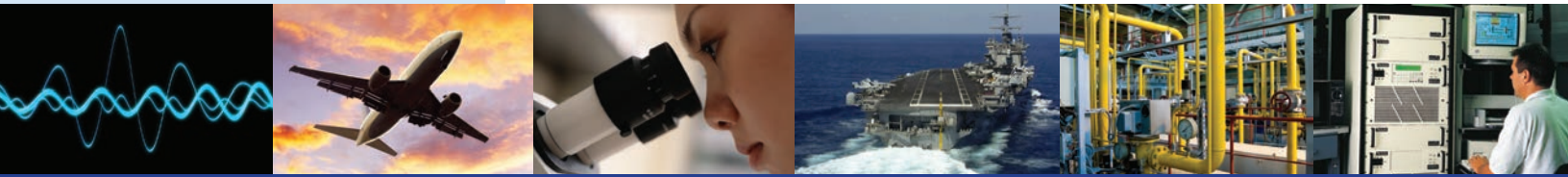
UPC SERIES CONTROLLER

Three controller models are available in both manual and programmable control version. All controllers provide manual operation from the front panel. Programmable Controllers may be operated from the front panel or from a remote interface via RS 232 or GPIB.

The Leader in AC Power Technology

An early pioneer in the development solid-state power conversion equipment, Pacific Power Source continues to develop, manufacture, and market both linear and high-performance PWM AC Power Sources. Pacific Power Source's reputation as a market and technology leader is best demonstrated by its continuing investments in both research and development and world-wide customer support. With corporate owned offices in the United States, Germany, the United Kingdom, and China, local personalized support is always available.

PACIFIC® POWER SOURCE
THE POWER OF EXPERTISE



FREQUENCY CONVERSION | AEROSPACE | R & D | MILITARY | MANUFACTURING | CUSTOM

Output Ratings

160AMX

Rated Power (VA)[1]	Coupling Mode	Form[2]	Output Voltage[3] V_{RMS} Max (L-N/L-L)	Current[4] (A_{RMS})	Frequency Range	Input Power	Unit Height In/mm/U	Unit Weight (Lbs/Kg)
6000	Direct	1Ø/2Ø	135/270	48/16	20-5000	3Ø 47-63Hz	14/356/8U	195 /88.6

160AMXT

Rated Power (VA)[1]	Coupling Mode	Form[2]	Output Voltage[3] V_{RMS} Max (L-N/L-L)	Current[4] (A_{RMS})	Frequency Range	Input Power	Unit Height In/mm/U	Unit Weight (Lbs/Kg)
6000	Direct	1Ø/2Ø	135/270	48/16	20-5000	3Ø 47-63Hz	160AMX 14/356/8U Transformer Module 5.25/133/3U	160AMX 195 /88.6 Transformer Module 125 /56.8
	Transformer 1.5:1	1Ø/2Ø	202/404	32/10.7	45-5000			
	Transformer 2.0:1	1Ø/2Ø	270/540	24/8	45-5000			
	Transformer 2.5:1	1Ø/2Ø	338/600	19.2/6.4	45-5000			

NOTES:
1. Rated output power is based on a combination of nominal output voltage, rated current and load power factor. Values stated represent the maximum capabilities of a given model (maximum power in split phase (Form2) direct coupled mode is 4 kVA). Consult factory for assistance in determining specific unit capabilities as they might apply to your application.
2. Unit is operable as single phase with dual range capability. Output voltage range and 1/2 conversions are selected by front panel or bus commands.
3. Vmax is output voltage with nominal input and full rated load applied.
4. Available current will vary with output voltage and power factor. Current shown is per phase.

AMX Power Source Specifications (PF = 1.0, V_{out} > 25% F.S.)

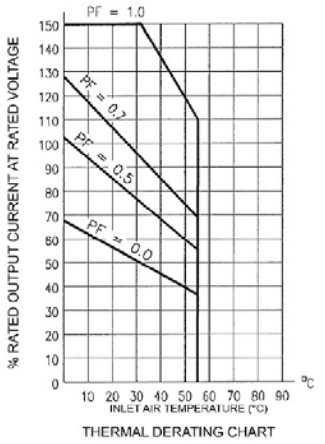
Output Frequency	Line Regulation	Load Regulation	Output Distortion	Ripple and Noise	Response Time
Full Power 20-5,000 Hz Direct Coupled 45-5,000 Hz Transformer Coupled	0.1% max for a ±10% line change	Direct Coupled Ranges: 0.25% 20 to 2,000 Hz. 0.50% 2,000 to 5,000 Hz. Improves to less than 0.03% with external sense and CSC enabled. Transformer Coupled Ranges: 1:5:1 2% 2:0:1 4% 2:5:1 5% Improve to < 0.1% with external sense and CSC enabled.	0.1% THD_{AVG} 45 to 1,000 Hz 0.25% THD_{AVG} 20 to 5,000 Hz	-72dB	5 µsec typ. For step load change. Small signal bandwidth = 5 Hz to 40 KHz

Input Power Requirements (47-63 Hz)

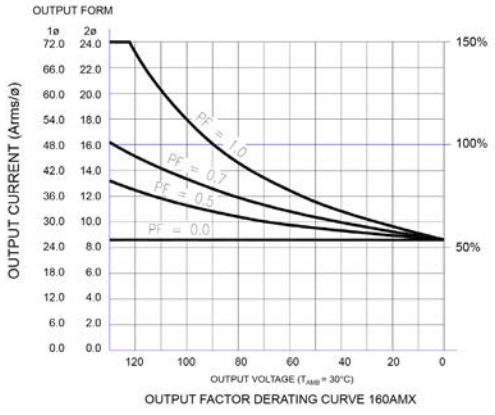
Input Voltage	208VAC 3ØΔ ±10%	220VAC 3ØΔ ±10%	230 or 240VAC 3ØΔ ±10%	220/380VAC ±10%	230/400VAC or 240/416VAC ±10%	277/480VAC ±10% (Cost Option)
Input Current	28A_{RMS}	26A_{RMS}	25A_{RMS}	15A_{RMS}	14A_{RMS}	14A_{RMS}
Recommended Input service	40A	40A	40A	20A	20A	20A

Thermal and Power Factor Rating Curves

Rated Continuous Load Current as a Function of Ambient Temperature and Power Factor and Output Voltage at Nominal Input Line.



THERMAL DERATING CHART



OUTPUT FACTOR DERATING CURVE 160AMX

THERMAL RATING -AC CURRENT RMS

Short tem overloads to 150% of rated current are permitted. Operating time before thermal shutdown or circuit breaker trip varies from seconds to several minutes depending upon line and temperature conditions.

OUTPUT VOLTAGE-AC VOLTS RMS

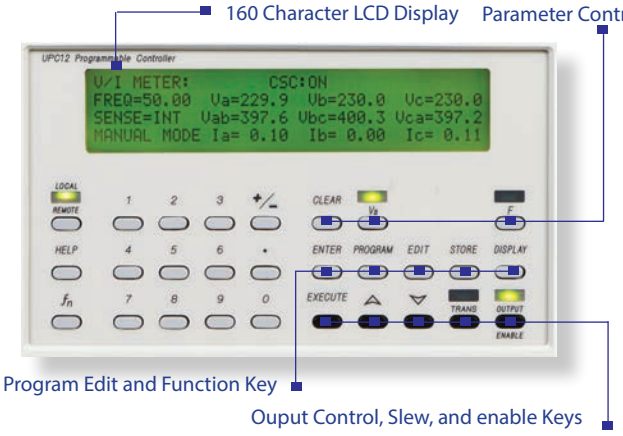
Short term overloads to 150% are permitted. Operating time before thermal shutdown or circuit breaker trip varies from seconds to several minutes depending upon line and temperature conditions.

Total Control, Metering, and Analysis of AC Power- Simple, Intuitive Operation

The UPC Controller is a highly versatile one, two, or three phase oscillator/signal generator designed to control any of Pacific Power's AC Power Sources. Three controller models, UPC-1M, UPC-1, or UPC-12 are offered. To use the full 5KHz power bandwidth of the 160AMX or 160AMXT, the UPC-12 controller is required.

Using the front panel keyboard and display, all controller models provide for selection of power source output mode, coupling, voltage, and frequency. Selecting the correct UPC controller for a given application varies with your test requirement, desired features, and price.

Both the UPC-1 and UPC-12 Controllers are available with either RS-232 or GPIB remote interface. Commands are structured in accordance with SCPI (Standard Commands for Programmable Instruments).



Controller Models

Features	UPC-1M	UPC-1	UPC-12
Output Modes	1Ø &2Ø	1Ø & 2Ø	1Ø, & 2Ø
Waveform Library	Sine	Sine + 21 Editable	Sine + 15 Editable
Transient Functions	NO	YES, 50 Steps	YES, 99 Steps
Program Library	NO	99 Programs	99 Programs
Programmable Current Limit	YES	YES	YES
Programmable Current Protect	YES	YES	YES
CSC (Continuous Self-Calibration)	YES	YES	YES
Remote Interface Std	NONE	RS-232	GPIB
Remote Interface Opt	NONE	GPIB	RS-232
Waveform Synthesis/Analysis	NO	OPTIONAL	OPTIONAL
Prog. Output Impedance	NO	OPTIONAL	OPTIONAL
Inrush Peak Detect	NO	OPTIONAL	NO
DRM Link-Synchronization	NO	NO	OPTIONAL
Line Synchronization	NO	NO	OPTIONAL

External Inputs/Outputs

Analog Auxilary Input	Each phase is algebraically summed with UPC waveform and amplified 25X to the direct coupled output. ±10Vpk (20Vpk-pk). One input per phase. Z_{IN} = 600 Ω
AM-Amplitude Modulation	±10 Vdc (20Vpk-pk) modulates the output voltage ±100% One input per phase. Z_{IN} = 600 Ω
Sync Outputs Zero Crossing	Positive Zero Crossing (0°) of Phase A analog output
Transient Trigger	Pulse at the start of a transient event. (UPC-32 only)
Transient Pedestal	TTL True when a transient is in progress
Output Clock	UPC-1, TTL level pulse rate varies with output frequency UPC-12, TTL level 1024 x output frequency

Waveform Control

Waveform Synthesis (/HAS Option)	Creates waveform by entering magnitude as % of fundamental and specified phase angle for 2nd through the 51st harmonic
Waveform Analysis (/HAS Option)	Reports waveform harmonic content and phase angle relative to the fundamental for the 2nd through the 51st harmonic as Total, Odd, and Even harmonic distortion

Output Control Specifications

		UPC-1M/UPC-1	UPC-12
Frequency	Range	20-1,200Hz	20-5,000Hz (1)
	Resolution	4 Significant Digits	
	Accuracy	±0.01% of full scale	
Voltage	Range (l-n)	0 - 150/375	
	Resolution	0.1V/ 0.5V	
	Accuracy	0.5% of full scale (CSC Disabled) ±0. 05% referenced to Internal Meter (CSC Enabled)	
Phase Angle ØB and ØC relative to ØA	Range	0 - 359°	
	Resolution	± 1°	
	Accuracy	15.00 -150Hz, ± 0.5° 15.00 - 300 Hz, ± 1° 15.00 - 600 Hz, ± 2° 15.00 - 1,200Hz, ± 3°	±0. 5°
Current Limit	Range	1Ø = 0 -150A_{RMS}	2Ø = 0 - 50$_{ARMS}$
	Resolution	0.05% F.S.	
	Accuracy	±3% F.S.	±1% F.S.

(1) Full power output limited to 1=5,000 Hz in AMX models

Output Metering

		UPC-1M/UPC-1	UPC-12
Voltmeter True V_{RMS} each phase	Range	0-354 V_{L-N}, 708V_{L-L}	
	Resolution	0.1V front panel	
	Accuracy	±0.2% F.S plus Cal ref.	50-500Hz, ± 0.25% of rdg. ± 0.1% F.S. 20-5,000 Hz, ± 0.5% F.S.
Ammeter True A_{RMS} and Apk each phase	Range	1Ø = 150A_{RMS}, 2Ø = 50A_{RMS}	
	Resolution	0.01A front panel	
	Accuracy	±0.2% F.S plus Cal ref.	±0.25% of rdg. 50-500Hz, ± 0.1% F.S. 20-5,000 Hz, ± 0.5% F.S.
Power Meter True Watts and Volt-Amps each phase	Range	1Ø = 53,100/Ø (W or VA), 2Ø = 17,700/Ø (W or VA)	
	Resolution	1.0 Watt or VA front panel	
	Accuracy	± 1% full range	
Power Factor Ratio : kW_{mtr}/kVA_{mtr}	Resolution	Calculated and displayed to three digits following the decimal point.	
	Accuracy	± 1 % full range	
Crest Factor Ratio: Apk/A_{RMS}	Resolution	Calculated and displayed to three digits following the decimal point.	
	Accuracy	± 1 % full range	
Freq. Display	Range	15.00 -1,200 Hz	20.00-5,000Hz
	Resolution	10.00-99.99 Hz, 0.01 Hz 100.0-999.9 Hz, 0.1 Hz 1,000-5,000 Hz, 1 Hz	
	Accuracy	± 0.01% full range	

160AMXT Power Source with optional external transformer module

16.75" (426mm)

17" (432mm)

19" (483mm)

8U (14", 356mm)

19" (483mm)

3U (5.25", 133mm)

160AMXT-UPC12 Power Source with optional external high range transformer module.

General/Environmental

Temperature	Operating: 0° to 55° C Storage: -10 ° to 70° C
Humidity	0 - 95%, Non-condensing
Cooling	Front and side forced air intake (600 CFM) with rear exhaust.
Altitude	Operating: 6,500 Ft (1,981m) Storage: 40,000 Ft (12,192 m)
Heat Dissipation	6.5kBTU/ hr (Full kW Load)
Audible Noise	65 dba Max @ 1 Meter
Agency Approvals	Safety UL 61010 -1 EN 61010 -1 EMC EN 61326 -1

Protection and Safety

Hardware	Over-current, short circuit, over- temperature
Programmable Current Limit	A single RMS programmed, average responding, value is provided for all phases. Limits current by reducing output voltage.
Programmable Current Protect	Allows the power source to operate in "constant voltage" mode, interrupting output when specified current protect limit is exceeded.

Mechanical Specifications

Height	160AMX: 8U (14", 356mm) Transformer Module: 3U (5.25", 133mm)
Depth	160AMX: 23.5" (597mm) Transformer Module: 3U (5.25", 133mm) (Approx. from front panel to the rear of chassis.)
Weight	160AMX: 195 lbs (88.6kg) Transformer Module: 125 lbs (56.8kg)
Mounting	Standard 19" rack (483mm). Cabinet options available.

Hardware Options

/S	RS232 Interface. 38.4kbps, (Standard on UPC-3)
/G	GPIB Interface, IEEE-488.2. (Standard on UPC-32)
/M7073	Safety Interlock Normally Open Contacts
/M99413	Safety Interlock Normally Closed Contacts
/PXXXXXX	Rack option available in different sizes, please contact Pacific Power Source for details.
/MXXXXX	Other factory specified modification

Software/Firmware Options

/Prog-Z	Programmable Output Impedance (not available with UPCxM)
/HAS	Harmonic Analysis and Synthesis (not available with UPCxM)
/IR	In-Rush Meter. Capture and view peak in-rush current values via front panel or remote interface (UPC-1 only).
Test MGR	UPC Test Manager License: Create, edit, and execute Test sequences and reports. Ordered as separate line Item
Test SEQ	Avionics test sequences; DO-160, ABD-0100, ABD-0100 (A350), Ordered as separate line item, Requires 'Test' Manager License.

Ordering Information

Model	Controller	Options	T-Ratio (160AMXT Only)	Input Voltage (V_{IN})
☐ 160AMX	☐ UPC-1M	See List Above	☐ Ratio 1.5:1	☐ 208 VACΔ ± 10%, 47-63Hz
☐ 160AMXT	☐ UPC-1		☐ Ratio 2.0:1	☐ 220VACΔ ± 10%, 47-63Hz
	☐ UPC-12		☐ Ratio 2.5:1	☐ 230VACΔ ± 10%, 47-63Hz
				☐ 240VACΔ ± 10%, 47-63Hz
				☐ 220/380VACΔ ±10%, 47-63Hz
				☐ 230/400VACΔ ±10%, 47-63Hz
				☐ 240/416 VACΔ ±10%, 47-63Hz
				☐ 277/480 VACΔ ±10%,47-63Hz

Available Models

With Manual Controller

160AMX-UPC1M
160AMXT-UPC1M

With Programmable Controller

160AMX-UPC1
160AMX-UPC12
160AMXT-UPC1
160AMXT-UPC12

Order Example

160AMXT-UPC12, T= 2.0:1, V_{IN}: 220/380VAC

- 6kVA, 1-Phase, AC Power Source with optional transformer assembly and UPC-12 programmable controller.
- Standard GPIB Interface
- 2.0:1 Transformer Ratio
- 220/380VAC, 1 Phase Input Voltage

Typical Delivery Items

- AC Power Source
- English Manuals (AC Source and Controller)
- UPC Studio Software - (Download)
- UPC Interactive LabVIEW™ Libraries (Download)
- Compliance Certificate with Test data
- CE Conformity Document (CE Models)

PACIFIC POWER SOURCE®

17692 Fitch, Irvine, CA 92614 USA
Phone: +1 949.251.1800
Fax: +1 949.756.0756
Toll Free: 800.854.2433
E-mail: sales@pacificpower.com
www.pacificpower.com

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CALTEST INSTRUMENTS

Caltest Instruments GmbH
Binzigstrasse 21
D-77876 KAPPELRODECK
www.caltest.de
Tel: +49(0)7842-99722-00
Fax: +49(0)7842-99722-29
info@caltest.de