Standard Features:

- 1 phase / 3 phase Selectable Output from front panel or bus command.
- 15 to 1,200 Hz. Operation – 5,000 Hz small signal bandwidth.
- 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.
- 99 stored programs with associated transients for static and dynamic test applications.
- UPC Studio Software Suite.
- UPC Interactive LabVIEW™ Libraries.

Available options:

- Rack enclosures with caster base
- Programmable Output Impedance
- Harmonic Analysis and Waveform Synthesis
- Peak Inrush Capture and Waveform Analysis
- UPCTestManagerSoftware Application
- Wide range of Output transformer options for world-wide testing.

Model 3120-ASX

As a member of Pacific’s ASX-Series family of high performance AC Power Sources, the 3120ASX offers the low acoustic noise, ease of installation, and maximum power density found in all of Pacific’s high frequency, pulse width modulated AC Power Sources. Control and operational features provide a high degree of versatility and ease for applications ranging from simple, manually controlled frequency conversion to harmonic testing and sophisticated bus programmable transient simulation.

AC TEST POWER

The 3120-ASX is equipped with a powerful micro-controller with the ability to operate as a fully integrated test system. It supplies a variety of power conditions and transients to the device under test while metering and analyzing all output performance parameters.

FREQUENCY/VOLTAGE CONVERSION

The 3120-ASX is an excellent source of stable AC Voltage over the frequency range of 15 to 1,200 Hz. The output frequency is quartz-crystal stabilized. Output voltages up to 600V are available.

PHASE CONVERSION

With the ability to provide single, two, and three-phase outputs, the 3120ASX is an ideal 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 offering both manual and programmable control. 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’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.
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. 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 or as a three phase. Output voltage range and 1/3 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.

Output Ratings

**3120ASX**

<table>
<thead>
<tr>
<th>Rated Power (VA)</th>
<th>Coupling Mode</th>
<th>Form</th>
<th>Output Voltage</th>
<th>Current</th>
<th>Frequency Range</th>
<th>Input Power</th>
<th>Unit Height</th>
<th>Unit Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>12000</td>
<td>Direct</td>
<td>10/20</td>
<td>135/270</td>
<td>96/48</td>
<td>15-1200</td>
<td>15-1200</td>
<td>30</td>
<td>15.75/400/9U</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30</td>
<td>135/234</td>
<td>32/Ø</td>
<td></td>
<td>47-63Hz</td>
<td></td>
<td>244 Lbs/111 kgs</td>
</tr>
</tbody>
</table>

**3120ASXT**

<table>
<thead>
<tr>
<th>Rated Power (VA)</th>
<th>Coupling Mode</th>
<th>Form</th>
<th>Output Voltage</th>
<th>Current</th>
<th>Frequency Range</th>
<th>Input Power</th>
<th>Unit Height</th>
<th>Unit Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>12000</td>
<td>Direct</td>
<td>10/20</td>
<td>135/270</td>
<td>96/48</td>
<td>15-1200</td>
<td>15-1200</td>
<td>30</td>
<td>3120ASX 15.75/400/9U</td>
</tr>
<tr>
<td>Transformer 1.5:1</td>
<td>10/20</td>
<td>30</td>
<td>202/404</td>
<td>64/32</td>
<td>45-1200</td>
<td>45-1200</td>
<td></td>
<td>3120ASX Transformer Module 280 Lbs/127 kgs</td>
</tr>
<tr>
<td>Transformer 2:1</td>
<td>10/20</td>
<td>30</td>
<td>270/540</td>
<td>48/24</td>
<td></td>
<td>45-1200</td>
<td></td>
<td>Transformer Module 280 Lbs/127 kgs</td>
</tr>
<tr>
<td>Transformer 2.5:1</td>
<td>10/20</td>
<td>30</td>
<td>338/600</td>
<td>38/19</td>
<td></td>
<td>45-1200</td>
<td></td>
<td>Transformer Module 280 Lbs/127 kgs</td>
</tr>
</tbody>
</table>

**ASX Power Source Specifications**

(PF = 1.0, \( V_{\text{avg}} > 25\% \) F.S.)

<table>
<thead>
<tr>
<th>Output Frequency</th>
<th>Line Regulation</th>
<th>Load Regulation (Typ. 3 Phase)</th>
<th>Output Distortion</th>
<th>Riggle and Noise</th>
<th>Response Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Power</td>
<td>0.1% max for a ±10% line change</td>
<td>3Ø direct coupled: 0.25% 15 to 400 Hz, 0.50% 400 to 1,200 Hz. 3Ø transformer coupled: 2 to 5% depending on ratio improves to less than 0.1% with external sense and CSC enabled</td>
<td>0.25% ( THD_{\text{Avg}} ) 15 to 200 Hz, 1.25% ( THD_{\text{Avg}} ) 200 to 1,200 Hz</td>
<td>-66dB</td>
<td>60 µsec typical, 10-90% load step</td>
</tr>
</tbody>
</table>

**Input Power Requirements (47-63 Hz)**

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>Input Current</th>
<th>Recommended* Input service</th>
</tr>
</thead>
<tbody>
<tr>
<td>208V 3ØΔ ±10%</td>
<td>40A_{rms}</td>
<td>60A</td>
</tr>
<tr>
<td>220V 3ØΔ ±10%</td>
<td>36A_{rms}</td>
<td>50A</td>
</tr>
<tr>
<td>230V 3ØΔ ±10%</td>
<td>36A_{rms}</td>
<td>50A</td>
</tr>
<tr>
<td>240V 3ØΔ ±10%</td>
<td>32A_{rms}</td>
<td>50A</td>
</tr>
<tr>
<td>220/380V 3ØΔ ±10%</td>
<td>22A_{rms}</td>
<td>30A</td>
</tr>
<tr>
<td>230/400V ±10%</td>
<td>21A_{rms}</td>
<td>30A</td>
</tr>
<tr>
<td>240/416V ±10%</td>
<td>20A_{rms}</td>
<td>30A</td>
</tr>
<tr>
<td>277/480V ±10%</td>
<td>16A_{rms}</td>
<td></td>
</tr>
</tbody>
</table>

*Power Source equipped with soft start feature. In-rush current at application of input power will not exceed recommended input service.

**Power Factor Rating Curves**

Rated Continuous load current as a function of Power Factor and Output Voltage-Nominal Input Line.

**Single Phase Mode**

![Single Phase Mode Graph]

**Two and Three Phase Mode**

![Two and Three Phase Mode Graph]
The UPC Controller is a highly versatile one, two, or three phase oscillator/signal generator designed to control any of Pacific's AC Power Sources. Three controller models, UPC-3M, UPC-3, or UPC-32 are offered for use with the 3120ASX.

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 requirements, desired features, and price.

Both the UPC-3 and UPC-32 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

<table>
<thead>
<tr>
<th>Features</th>
<th>UPC-3M</th>
<th>UPC-3</th>
<th>UPC-32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Modes</td>
<td>1Ø, 2Ø, &amp; 3Ø</td>
<td>1Ø, 2Ø, &amp; 3Ø</td>
<td>1Ø, 2Ø, &amp; 3Ø</td>
</tr>
<tr>
<td>Waveform Library</td>
<td>Sine</td>
<td>Sine + 21 Editable</td>
<td>Sine + 15 Editable</td>
</tr>
<tr>
<td>Transient Functions</td>
<td>NO</td>
<td>YES, 50 Steps</td>
<td>YES, 99 Steps</td>
</tr>
<tr>
<td>Program Library</td>
<td>NO</td>
<td>99 Programs</td>
<td>99 Programs</td>
</tr>
<tr>
<td>Programmable Current Limit</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Programmable Current Protect</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Programmable Phase Angle</td>
<td>NO</td>
<td>YES, 0 to 35°</td>
<td>YES, 0 to 35°</td>
</tr>
<tr>
<td>CSC (Continuous Self-Calibration)</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Remote Interface</td>
<td>Std Opt</td>
<td>NONE</td>
<td>RS-232</td>
</tr>
<tr>
<td>Waveform Synthesis/Analysis</td>
<td>NO</td>
<td>OPTIONAL</td>
<td>OPTIONAL</td>
</tr>
<tr>
<td>Prog. Output Impedance</td>
<td>NO</td>
<td>OPTIONAL</td>
<td>OPTIONAL</td>
</tr>
<tr>
<td>Inrush Peak Detect</td>
<td>NO</td>
<td>OPTIONAL</td>
<td>NO</td>
</tr>
<tr>
<td>DRM Link-Synchronization</td>
<td>NO</td>
<td>NO</td>
<td>OPTIONAL</td>
</tr>
<tr>
<td>Line Synchronization</td>
<td>NO</td>
<td>NO</td>
<td>OPTIONAL</td>
</tr>
</tbody>
</table>

### Output Control Specifications

#### Frequency

- **UPC-3M/UPC-3**
  - Range: 15.000 - 1,200Hz
  - Resolution: 4 Significant Digits
  - Accuracy: ±0.01% of full scale

- **UPC-32**
  - Range: 20.000 - 5,000Hz
  - Resolution: 4 Significant Digits
  - Accuracy: ±0.01% of full scale

#### Voltage

- **UPC-3M/UPC-3**
  - Range (nV): 0 - 150 Vrms
  - Resolution: 0.1 Vrms
  - Accuracy: ±0.01% of full scale

- **UPC-32**
  - Range (nV): 0 - 150 Vrms
  - Resolution: 0.05 Vrms
  - Accuracy: ±0.01% of full scale

#### Phase Angle

- **UPC-3M/UPC-3**
  - Range: 0° to 359°
  - Resolution: ±1°
  - Accuracy: ±0.5°

- **UPC-32**
  - Range: 0° to 359°
  - Resolution: ±1°
  - Accuracy: ±0.5°

#### Current Limit

- **UPC-3M/UPC-3**
  - Range: 1Ø = 0 - 300 Apk
  - Resolution: 0.01 Apk
  - Accuracy: ±1% F.S.

- **UPC-32**
  - Range: 3Ø = 0 - 100 Apk
  - Resolution: 0.01 Apk
  - Accuracy: ±1% F.S.

#### AM-Amplitude Modulation

- **UPC-3M/UPC-3**
  - ±0.1 Vpp (20Vpp-pk)
  - One input per phase: \( r_A = 600 \Omega \)

- **UPC-32**
  - ±0.1 Vpp (20Vpp-pk)
  - One input per phase: \( r_A = 600 \Omega \)

### 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

### External Inputs/Outputs

#### Analog Auxiliary Input

- Each phase is algebraically summed with UPC waveform and amplified 25X to the direct coupled output, and amplified 25X to the direct coupled output.

#### AM-Amplitude Modulation

- \( ±0.1 \text{ VDC} (20\text{VPP-pk}) \) modulates the output voltage

#### 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-3, TTL level pulse rate varies with output frequency

- UPC-32, TTL level 1024 x output frequency

### Output Metering

#### Voltmeter

- **UPC-3M/UPC-3**
  - Range: 0.0 - 20.0 Vrms, ±0.1% of full scale
  - Accuracy: ±0.2% of full scale

- **UPC-32**
  - Range: 0.0 - 20.0 Vrms, ±0.1% of full scale
  - Accuracy: ±0.2% of full scale

#### Ammeter

- **UPC-3M/UPC-3**
  - Range: 0.1Ø = 300 Apk, 3Ø = 100 Apk
  - Resolution: 0.01 Apk
  - Accuracy: ±1% F.S.

- **UPC-32**
  - Range: 0.3Ø = 100 Apk
  - Resolution: 0.01 Apk
  - Accuracy: ±1% F.S.

#### Power Meter

- **UPC-3M/UPC-3**
  - Range: 1Ø = 106,200 W, 3Ø = 35,400 W
  - Resolution: 0.01 kW or 0.01 kW via remote interface
  - Accuracy: ±0.1% full range

- **UPC-32**
  - Range: 1Ø = 5,000 W, 3Ø = 1,500 W
  - Resolution: 0.01 kW or 0.01 kW via remote interface
  - Accuracy: ±0.1% full range
3120ASX-3120ASXT

General/Environmental

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>Operating: 0° to 55°C</td>
</tr>
<tr>
<td></td>
<td>Storage: -10° to 70°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>0 - 95%, Non-condensing</td>
</tr>
<tr>
<td>Cooling</td>
<td>Front and side forced air intake (600 CFM) with rear exhaust. Automatic Fan Speed Control for low acoustic noise and extended fan life.</td>
</tr>
<tr>
<td>Altitude</td>
<td>Operating: 6,500 Ft (1,981m)</td>
</tr>
<tr>
<td></td>
<td>Storage: 40,000 Ft (12,192 m)</td>
</tr>
<tr>
<td>Heat Dissipation</td>
<td>138BTU/ hr (Full kW Load)</td>
</tr>
<tr>
<td>Audible Noise</td>
<td>Variable speed fans 65 dba Max @ 1 Meter</td>
</tr>
<tr>
<td>Agency Approvals</td>
<td>Safety UL 61010 -1</td>
</tr>
<tr>
<td></td>
<td>EN 61010 -1</td>
</tr>
<tr>
<td></td>
<td>EMC EN 61326 -1</td>
</tr>
</tbody>
</table>

Protection and Safety

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Programmable Current Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A single RMS programmed, average responding, value is provided for all phases. Limits current by reducing output voltage.</td>
</tr>
<tr>
<td>Programmable Current Protect</td>
<td>Allows the power source to operate in &quot;constant voltage&quot; mode, interrupting output when specified current protect limit is exceeded.</td>
</tr>
</tbody>
</table>

Mechanical Specifications

- Height: 3120ASX: 9U (15.75", 400mm) Transformer Module: 4U (7", 178mm)
- Depth: 3120ASX: 29" (737mm) Transformer Module: 23.5" (597mm) (Approx. from front panel to the rear of chassis.)
- Weight: 3120ASX: 244 lbs (111kg) Transformer Module: 280 lbs (127kg)
- Mounting: Standard 19" rack (483mm). Cabinet options available.

Hardware Options

- /M7073: Safety Interlock Normally Open Contacts
- /M99413: Safety Interlock Normally Closed Contacts
- /P00828: 15U rack enclosure, heavy duty vertical cabinet with casters and rear screen
- /MXXXXX: Other factory specified modification

Software/Firmware Options

- /S: RS-232 Interface, 38.4 Kbps (std UPC-3)
- /G: GPIB Interface, IEEE-488.2 (std UPC-32)
- /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-3 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

<table>
<thead>
<tr>
<th>Model</th>
<th>Controller</th>
<th>Options</th>
<th>T-Ratio (3120ASXT Only)</th>
<th>Input Voltage [V IN]</th>
</tr>
</thead>
<tbody>
<tr>
<td>3120ASX</td>
<td>UPC3M</td>
<td>See List Above</td>
<td>Ratio 1.5:1</td>
<td>208 VACΔ ± 10%, 47-63Hz</td>
</tr>
<tr>
<td>3120ASXT</td>
<td>UPC3</td>
<td>See List Above</td>
<td>Ratio 2.0:1</td>
<td>220VACΔ ± 10%, 47-63Hz</td>
</tr>
<tr>
<td></td>
<td>UPC32</td>
<td>See List Above</td>
<td>Ratio 2.5:1</td>
<td>230VACΔ ± 10%, 47-63Hz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See List Above</td>
<td></td>
<td>240VACΔ ± 10%, 47-63Hz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See List Above</td>
<td></td>
<td>220/380VACΔ ± 10%, 47-63Hz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See List Above</td>
<td></td>
<td>230/400VACΔ ± 10%, 47-63Hz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See List Above</td>
<td></td>
<td>240/416 VACΔ ± 10%, 47-63Hz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See List Above</td>
<td></td>
<td>277/480 VACΔ ± 10%, 47-63Hz</td>
</tr>
</tbody>
</table>

Order Example

3120ASXT-UPC3/G, T= 2.0:1, V IN: 220/380VAC

- 12 kVA, 3-Phase, AC Power Source with optional transformer assembly and UPC-3 programmable controller.
- Optional GPIB Interface
- 2.0:1 Transformer Ratio
- 220/380V, 3 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)

Available Models

With Manual Controller

- 3120ASX-UPC3M
- 3120ASXT-UPC3M

With Programmable Controller

- 3120ASX-UPC3
- 3120ASXT-UPC3
- 3120ASX-UPC32
- 3120ASXT-UPC32