PACIFIC POWER SOURCE

AZX Series

Introducing the AZX Series

The Industry's Most Flexible, Comprehensive, and Intelligent All-in-1 Regenerative AC/DC Source and Load

Regenerative

PHIL Interface Option

Constant Power

High Current

Wide Frequency Range

Scalable Power

Key Features

- All-in-1 AC/DC Source, Current Source & Load
  - » 4-Quadrant AC & DC Power Source
  - » Programmable Current Source
  - » AC/DC Electronic Load Option
- Available Models 30kW, 45kW & 55kW; parallel up to 440kW
- Three Phase, Split Phase and Single Phase Output Modes
- AC, DC, AC+DC or AC+DC Output Capability
- Dual Constant Power Voltage Range
  - » AC Voltage Ranges: 0~225Vac and 0~440Vac
  - » DC Voltage Ranges: 0~335Vdc and 0~650Vdc
- Frequency Range DC, 15 - 1000Hz or 1Hz - 15Hz in VLF mode
- Phase Angle Programming, Output Transient Programming
- Precise Output Voltage and Load Regulation
- Metering of Volts, RMS Current, Peak Current, Apparent Power & True Power on All Phases
- Harmonic Measurements
- Scope Function to Capture Voltage & Current Waveforms
- Sine, Square, Triangle, Clipped Sine and Arbitrary Waveforms
- Programmable Output Impedance
- **SmartSource Suite** Remote Control Platform
- Standard USB, LAN (LXI), RS232 & GPIB Interfaces
- High Speed Analog I/O for PHIL Amplifier Mode (Option H)

GPIB RS232 USB LAN LXI Flexible Control

AZX Series

Regenerative 4-Quadrant AC and DC Source

The AZX Series is an all-in-1 regenerative 4-quadrant AC and DC power source that can function as an AC voltage source, DC power supply, current source, AC/DC load, and PHIL Interface. The AZX's high-power density provides 30kVA/kW up to 55kVA/kW in a single cabinet and can parallel up to 440kVA/kW.

This comprehensive platform is optimized for PHIL, has three powerful DSPs to cover advanced applications, and eliminates the need for add-on equipment. It has highly versatile channel outputs for dynamic applications, and advanced control and programming capabilities.

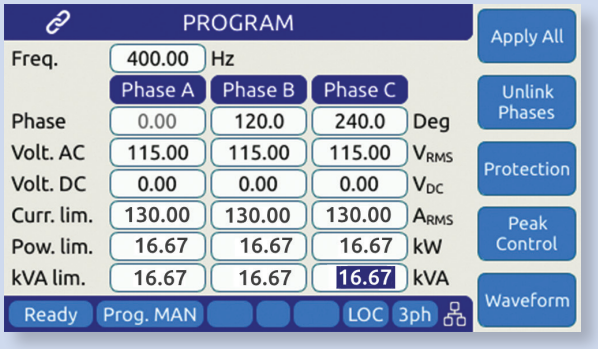
The wide selection of power, frequency, and phase angle modes allow you to test a wide range of grid-tied products in the renewable energy, electric vehicle charging, aerospace, and industrial markets. Easily test the UUT to regulatory compliance standards.

Application Examples:

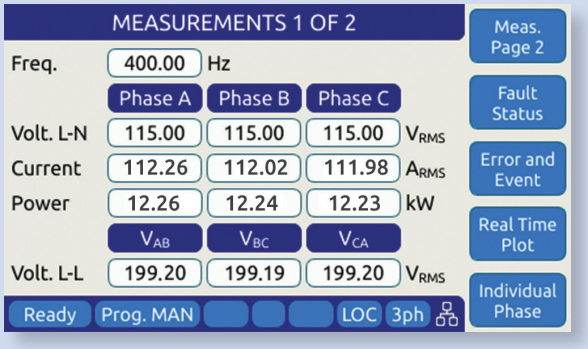
- Aerospace & Defense Power and Compliance Testing
- EV Charging, On Board Chargers (OBC), V2G, V2H and V2X
- Solar PV/Grid-Tied Inverters
- Energy Storage Systems (ESS), Home ESS
- Smart-Grid Simulation
- Power Hardware in the Loop (PHIL)
- EMC Compliance Testing

Front Panel Operation

Programming



Metering



Regenerative Grid Simulation Applications

Growing demand for renewable energy sources is fueling the need to test AC and DC products and systems that can recycle energy back to the grid. Regulatory and performance test requirements of these systems require an AZX Power Source for grid simulation.

With extensive control over voltage, current, frequency, phase angles and transients, the AZX series supports testing of solar inverters (PV), energy storage systems (ESS), EV Batteries and Traction Systems as well as on-line UPS equipment with both AC and DC source and sink capabilities.

Avionics & Defense Test Applications

The wide output frequency range of the AZX Series Power Source allows its application to avionics and defense power applications requiring either 400Hz fixed or 360Hz to 800Hz wild frequency output. For emerging battery backed DC avionics power systems, multiple 270Vdc outputs can be used to simulate a split 540Vdc aviation DC power bus.

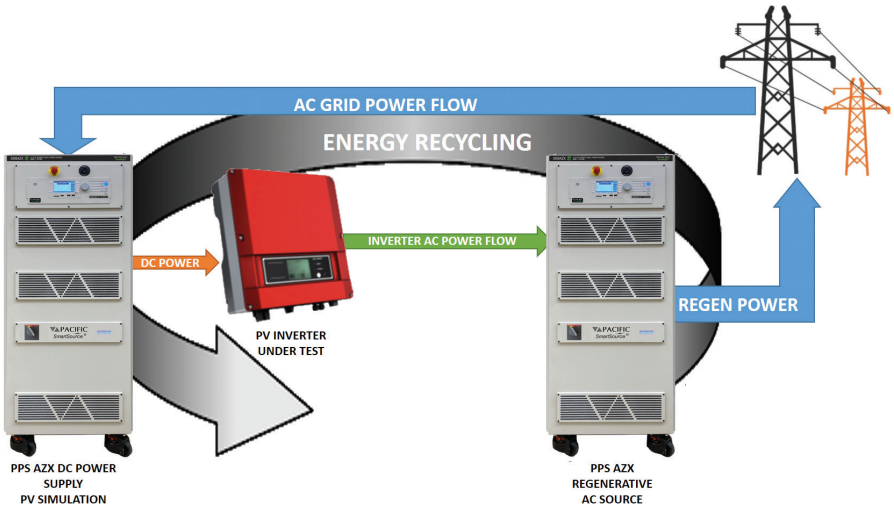
High power, three-phase configurations are available to meet regenerative or conventional power test demands. As needs change over time, additional units can be added easily to keep up with your test needs while protecting your original investment.

Grid-tied Power Generation Equipment Test

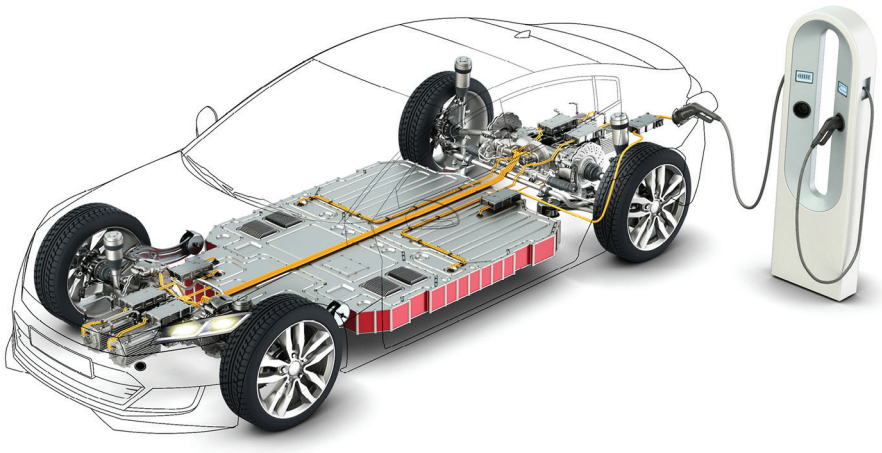
Testing wind or solar inverters for compliance with international regulations requires testing to both UL and IEC safety and EMI standard.

The SmartSource Suite web browser control capability supports test sequences to address several of these tests such as Low Voltage Ride Through (LVRT) and anti-islanding.

Using this capability allows easy creation of country specific LVRT and other energy generating equipment tests.



Electric Vehicle Charger Test



The growing demand for electric vehicles necessitates the need to expand the EV Charging infrastructure both for public charging as well as in home charging. The AZX can play a key role in both AC connection testing and DC testing of On Boards Chargers - bidirectional Vehicle to Grid (V2G) or non-bidirectional - as well as high power public charging stations. The AC and DC capability of the AZX Series accommodates testing of a wide range of EV Charging solutions.

Regulatory Compliance Test Systems

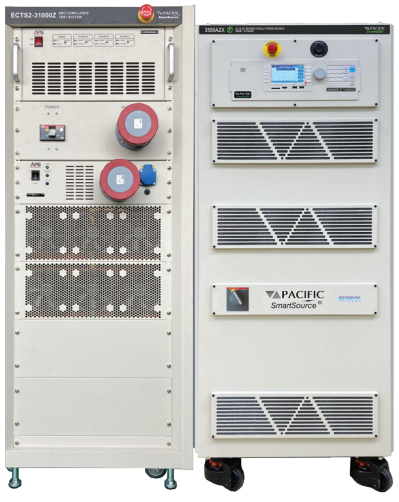
The AZX Based EMC Compliance Test Systems from Pacific Power Source provide full compliance testing of product to IEC 61000-3 Emissions and IEC 61000-4 Immunity test standards for CE Compliance certification.

For bidirectional products, AZX based ECTS2 EMC test systems combine the benefits of the AZX Series with the Harmonics and Flicker measurements capabilities and immunity test software.

The full suite of ECTS2 Windows 10 EMC Test Software is compatible with the AZX Series. Supported standards include:

Emissions Tests:
IEC 61000-3-2, IEC 61000-3-3, IEC 61000-3-11, IEC 61000-3-12

Immunity Tests:
IEC 61000-4-11p, IEC 61000-4-14, IEC 61000-4-17, IEC 61000-4-27p, IEC 61000-4-28, IEC 61000-29p, IEC 61000-4-34p, Korean std KS_C_9610-4-11 and KS_C_9610-4-29



SmartSource Suite Web Browser Control

Although AZX Series sources offer a wide range of operating modes and features, they are easy to operate through a front panel full color LCD display and soft key driven menus.

Top level menus are always available directly by pressing any of the five menu keys on the left of the display. Entering setup data is accomplished using the numeric keypad or the shuttle. Operating status is shown on screen using various colors to distinguish between setting, measurements and operator warnings, or error messages. Selectable language are **ENGLISH** or **SIMPLIFIED CHINESE**.

The unique built-in **SmartSource Suite** web browser control function provides an advanced user interface for complete control over all AZX Functions and features without the need for any special software or drivers.

Dual Constant Power Voltage & Current Ranges

The AZX series supports both low and high voltage ranges for either AC or DC mode. In AC mode, constant power is available from 52% of full scale voltage to 100% of full scale voltage as shown in Figure 1 & 3 below.

This allows higher currents to or from the EUT at lower than full scale voltage than would otherwise be possible. For voltage settings below 52% of full scale, current remains at max. rated current.

On 3550AZX models, the 440Vac range supports 75A at 244Vac for load currents with a crest factor below 1.8. This supported Harmonics & Flicker testing to the max. required current per IEC61000-3-11 & IEC61000-3-12.

In DC mode, constant power is available from 50% of full scale voltage to 100% of full scale as shown in Figure 2 & 4 below.

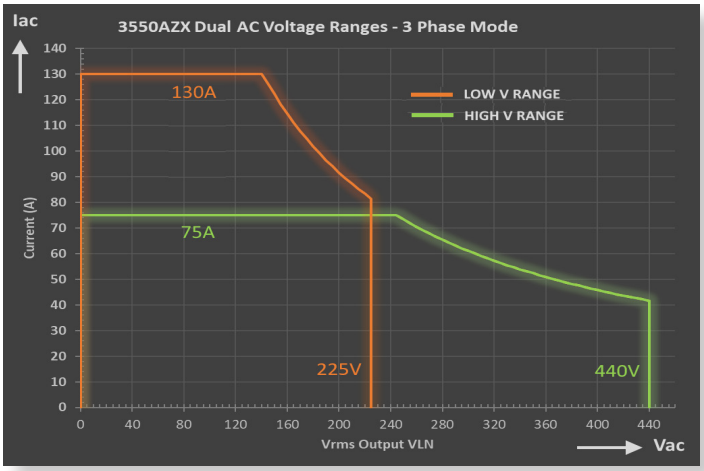


Figure 1: High and Low AC Voltage Ranges - Current vs. Voltage - 55kW

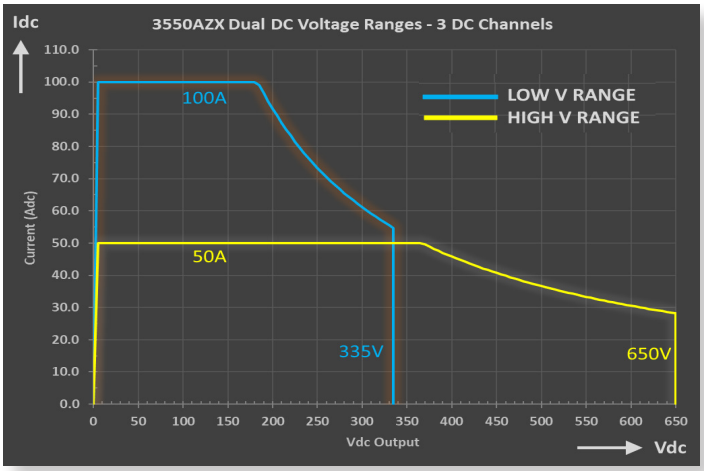


Figure 2: High and Low DC Voltage Ranges - Current vs. Voltage - 55kW

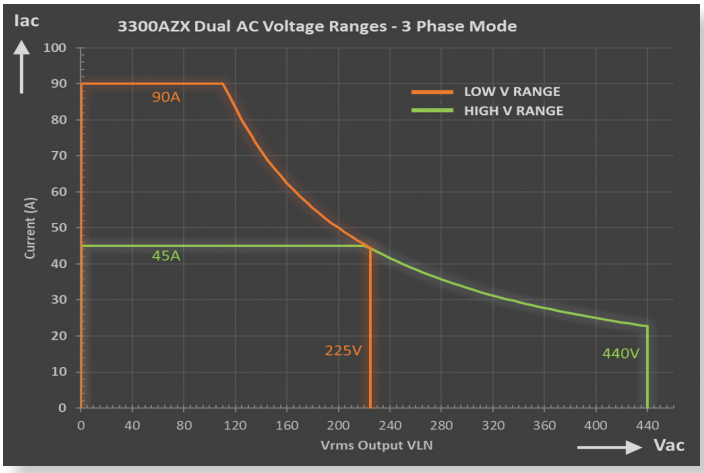


Figure 3: High and Low AC Voltage Ranges - Current vs. Voltage - 30kW

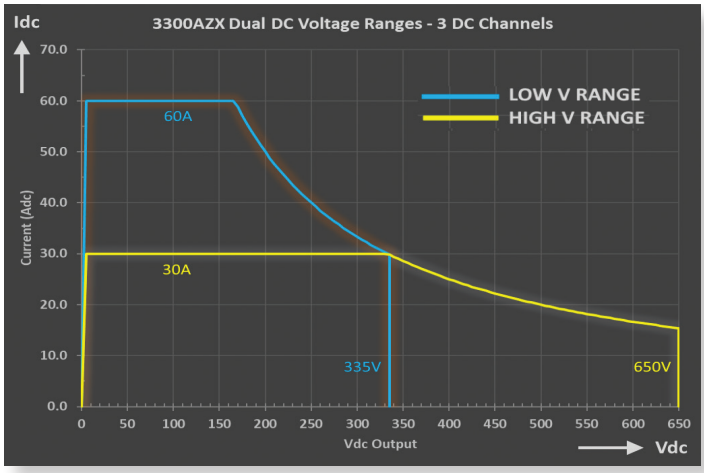
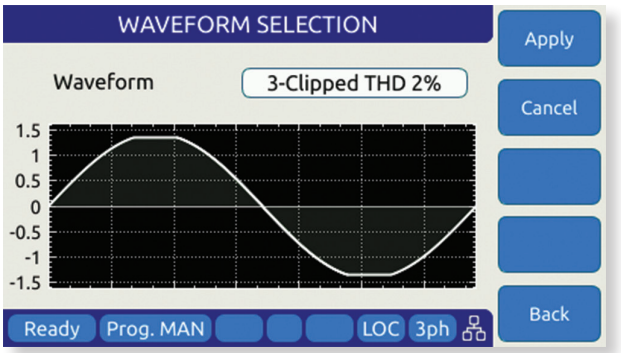


Figure 4: High and Low DC Voltage Ranges - Current vs. Voltage - 30kW

200 Selectable Arbitrary Waveforms

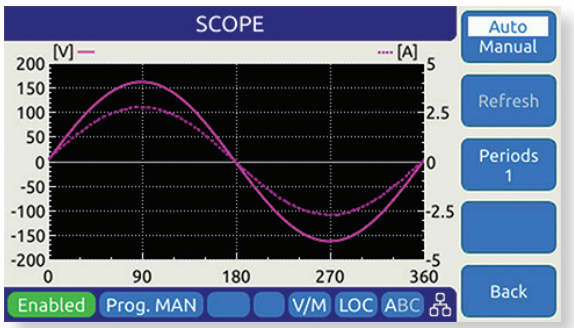
In addition to sine wave, the AZX Series offers multiple selectable AC waveforms such as clipped sine wave at various distortion levels, square, triangle and stepped squares. The operator can create arbitrary waveforms using Pacific Power's SmartSource Suite web browser interface and download these to the power source. A graphical representation (preview) of each waveform is shown on screen and a waveform name alias can be assigned to each so the operator can be sure the correct waveform is applied to the unit under test.



Clipped Sine Waveform Selection - Vthd = 2%

Voltage & Current Waveform Captures

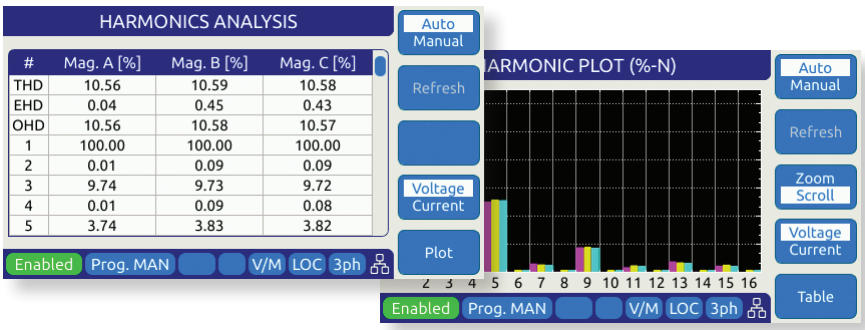
Built-in digital scope function captures voltage and current time domain signals, perfectly synchronized to the output frequency. Voltage and current displayed with accurate phase relationship. Display output waveforms on front panel or in Web browser.



Voltage & Current Harmonic Measurements

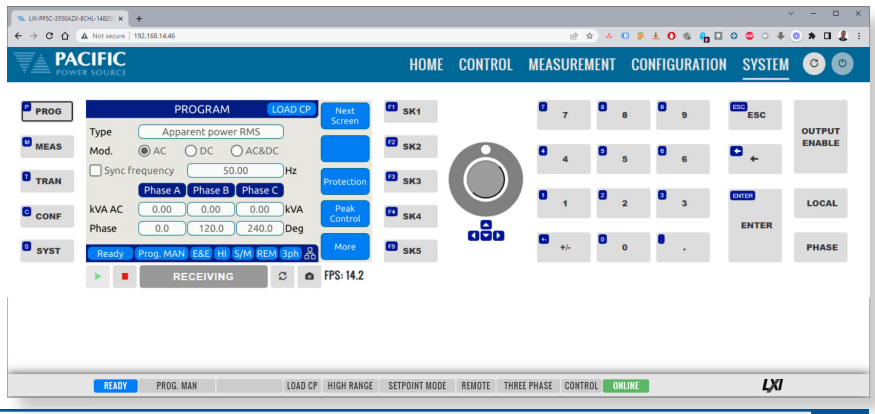
Eliminate the need for an external power analyzer by measuring voltage and current harmonics. Harmonics information is displayed in either bar charts or detailed table format for easy viewing and analysis.

Data is displayed for each phase or all three phase simultaneously.



Web Browser Control

The standard LAN interface allows remote control and monitoring from any web browser capable smart phone, tablet or PC. The built in web server includes a virtual front panel mimicking the actual front panel layout so any operator familiar with the AZX front panel will be familiar with the browser interface instantly.

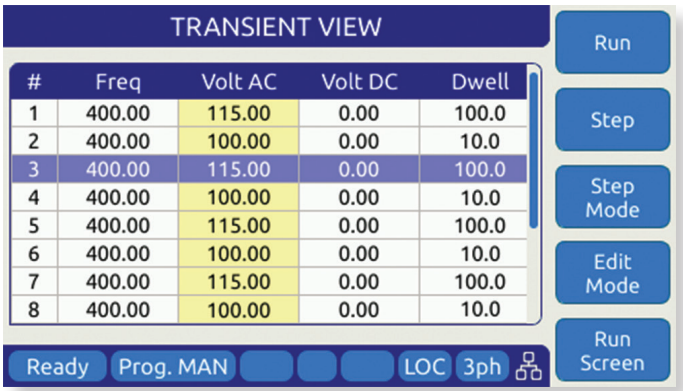


AC Voltage or Current Transient Programming

Voltage, Waveform and Frequency output transients are easily created from the front panel using an intuitive spreadsheet style data entry method. Data may be entered for a specific phase or for all three phases at the same time.

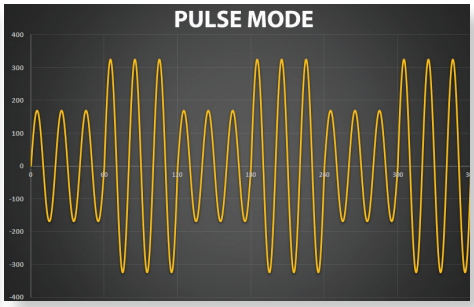
The AZX Series supports LIST, PULSE and STEP Mode Transient Types. The user can select the most appropriate type from the front panel or the web server interface. The image below illustrates the three modes graphically. Transients can be stored in non-volatile memory and easily edited as needed on screen.

If preferred, transient programming and execution can be also be accomplished using the available Windows control software.

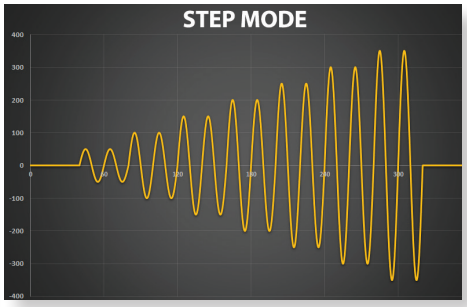


Transient Executing in View Mode

TRANSIENT LIST MODE

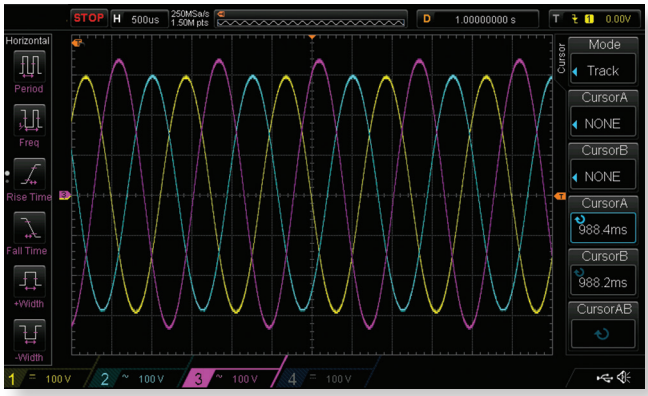


TRANSIENT PULSE MODE

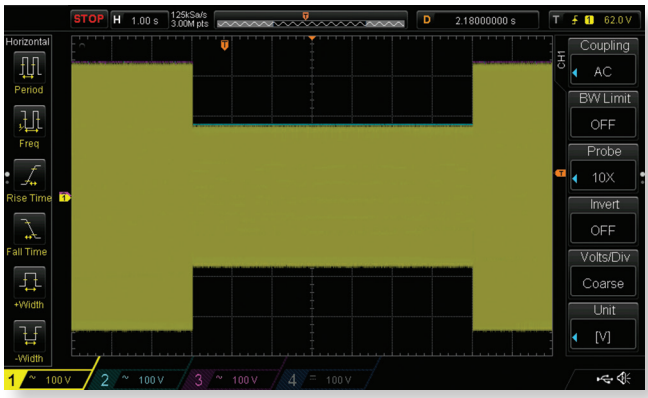


TRANSIENT STEP MODE

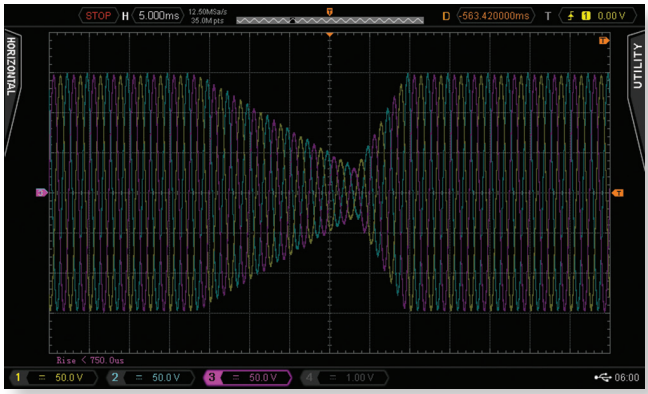
The AZX Series' rich feature set supports a wide variety of AC power test applications. With full control over voltage, current, frequency, power, slew rates and phase angles, no test requirement is too challenging for the AZX to handle. This includes AC power compliance testing, transformer testing, appliance testing, DC charger testing, UPS testing and more. With scalable power configurations, test needs can grow over time without having to re-invest in new AC power sources as auxiliary units can be added to an existing AZX system at any time. The scope images shown here capture several examples of AC power test waveforms generated by an AZX.



Three Phase Unbalance Voltage Test Captured



Three Phase Voltage Drop Test Captured



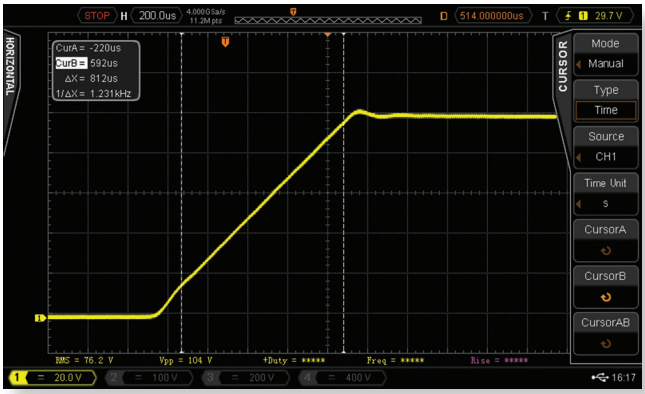
AC Transient Output Captured on Digital Scope

DC Voltage or Current Transient Programming

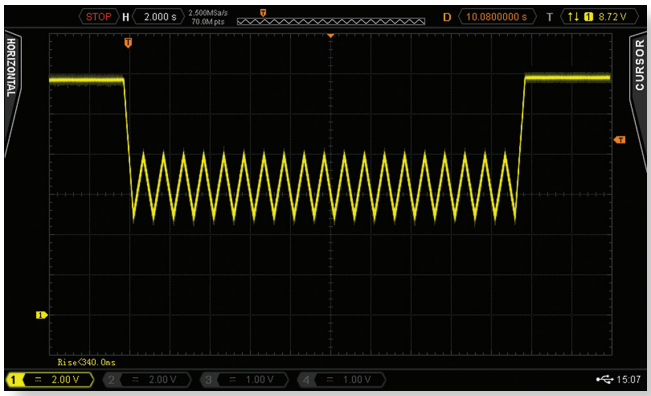
The AZX Series doubles as a DC power supply with either a single DC output (FORM1) or up to three individual bipolar (4-Quadrant) DC outputs. Available voltage ranges are 335Vdc, 650Vdc and the same constant power range technology is used to provide a wide operating range for diverse DC voltage and current requirements. See Volt/ Current Charts Figure 2 & 4 on page 4.

Transient programming covers DC levels and slew rates as is the case for AC applications but there is no frequency to program.

Programmable voltage slew rate settings may be used to control the rise and fall time of any DC voltage change. The scope images shown here capture examples of DC voltage ramps performed at a specific slew rate set on the AZX.



DC Voltage Ramp Up @ 100Vdc/ms programmed slew rate Captured



DC Voltage Transient Output Captured

Unique AZX Features & Benefits

The AZX Series is based on an advanced Silicon-Carbide technology platform that enables functionality not previously found on regenerative AC and DC source products from other manufacturers. These features help address a wide range of applications while at the same time providing a higher level of protection for the unit under test.

Regenerative 4-Quadrant Operation

The AZX Series is a full, four-quadrant, All-in-1 AC and DC voltage and current source, targeted at renewable energy, electric vehicles chargers and grid tied energy producing product development and test. Regenerative operation is available in both AC and DC mode or any combination of AC and DC power.

Scalable power from 30kW to 440kW using multiple AZX units covers a wide range of power applications.

Enhanced Protection Modes

Not only does the AZX offer programmable current limit protection mode, it goes beyond this by adding:

- Programmable Real Power Protection
- Programmable Apparent Power Protection
- Over Voltage Protection
- Over Temperature Protection

Optional Electronic Load Functionality

By adding the "L" option, the AZX Series can be used as a full featured regenerative AC and DC Load for testing AC power sources, Uninterruptable Power Supplies (UPS), EV Batteries or other AC or DC power generating equipment. This greatly expands the utility of the AZX Series. See page 8 for more information on the L Option.

Parallel Configurations

Multiple AZX units can be configured for parallel operation to meet higher power and current requirements.

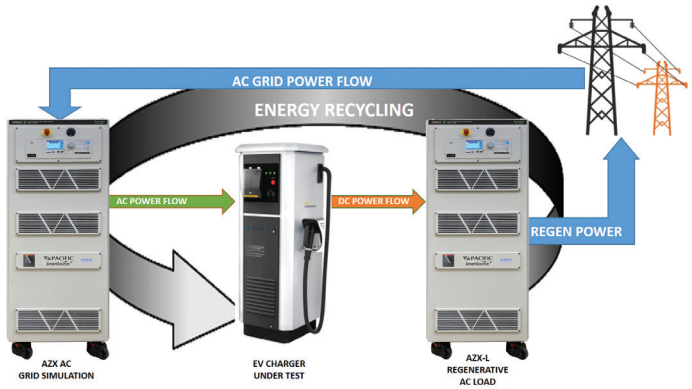
Cost Savings

When sinking AC or DC power, energy is returned to the AC Utility Grid rather then dissipated. This allows large power systems to be tested without the need for a high power utility connection, lower utility bills and lower HVAC cost, all saving both money and the environment.

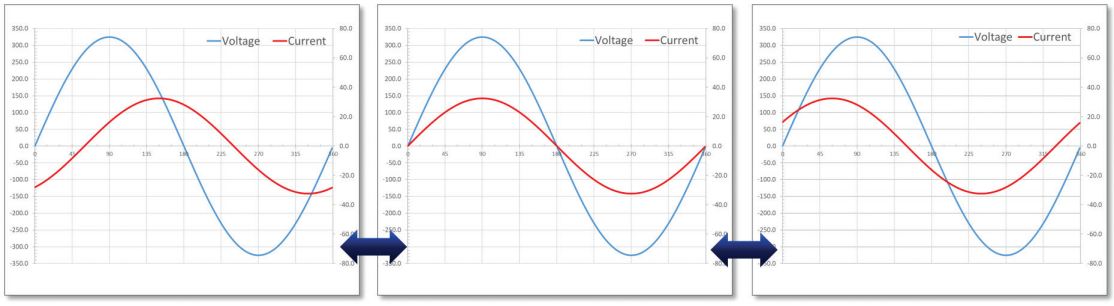
AC & DC Load Modes (Option L)

The **L Option** adds programmable, regenerative, electronic load mode for AC and DC applications to AZX Series power sources. In AC mode, either sinusoidal or non-linear load current waveforms are programmable using full arbitrary waveform capability. Load operating modes supported are Constant Current (CC), Constant Resistance (CR), Constant Power (CP) and Circuit Emulation (CE) mode. See diagram below.

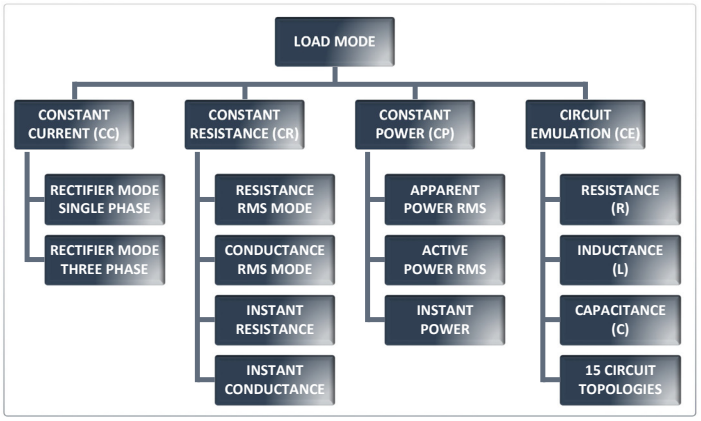
Typical applications for AZX-L are Electric Vehicle Support Equipment (EVSE) such as public or in-home charging stations, hybrid PV inverters, Uninterruptable Power Supplies (UPS) and micro-grid related test applications.



The AZX Load mode offers four main operating modes with both RMS and Real-time modes as well as a rich set of features in each mode. Programmable phase shift between input voltage and load current allows for ±1 or 0 Power Factor control.



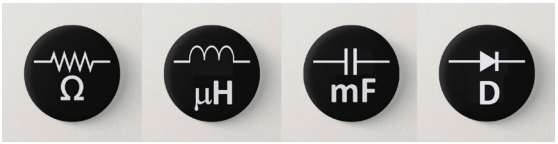
Programmable Current Phase Shift for Power Factor Control



Available AZX Load Operating Modes

Features	CC Mode	CR Mode	CP Mode	CE Mode
User Waveform	✓	✓	✓	
Rectifier Waveform	✓	✓	✓	
Current Harmonics	✓			
Current Inter Harmonic	✓			
Sync Mode	✓	✓	✓	✓
Transient Programming	✓	✓	✓	
AC, DC & AC+DC Mode	✓	✓	✓	✓
Analog Input Programming	✓	✓	✓	

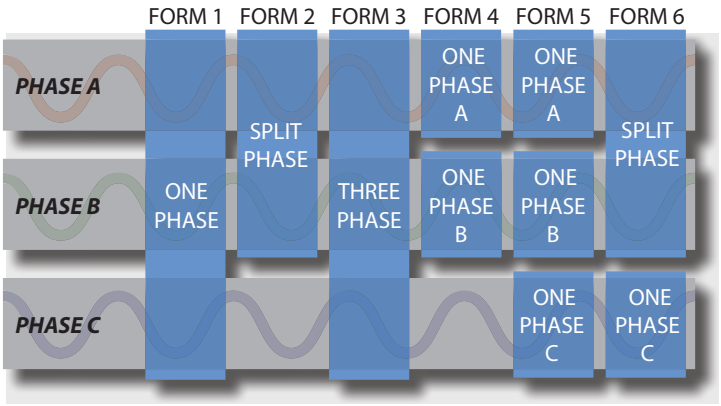
Available Features for each Load Mode



Mode	Circuit Diagram	Mode	Circuit Diagram
R		Series RLC	
Series RL		R // Series RLC	
Series RC		Series RL // Series RC	
R // Series RL		R // Series RL // Series RC	
R // Series RC		Series RL (R // C)	
R (L // C)			
L (R // C)		Rectifier Single Phase	
C (R // L)		Rectifier Three Phase	

Available Circuit Topologies in Circuit Emulation (CE) Mode

Ultimate Flexibility With Six Output Configurations



Simultaneous AC & DC Operation on Individual Phases and Automatic Switching of Operation Modes

In addition to the conventional single, split and three phase output modes, the AZX also supports fully independent output modes for either 2 or 3 'channels'. In these modes, each channel can be set to have a different operation mode (Voltage Source, Current Source or Load) and frequency (for AC). Specify option "W" to have the factory disconnect the three neutral terminals shorting bar to support 3 fully isolated channels.

Power HIL Support (Option H)

To support integrated test system design, the AZX Series offers a standard suite of analog and digital I/O functions. The user can assign command macros or setting parameters to analog or digital I/O pins as needed. This provides a unique level of customization for putting together sophisticated test stations.

By adding the H Option, the AZX can be used as an amplifier for PHIL Applications. This analog interface provides high speed input for controlling frequency, voltage or current and waveshape. Voltage and Current output capture signals are returned to the simulation system. These analog I/O lines can be connected to commercially available HIL systems.

Safety Level D (Option D)

The D option adds performance level class D safety features in accordance with EN ISO 13849-1 for up to two AZX cabinets. Features:

- Remote reset - the unit's circuit breaker will not trip. It can be reset with an external 24Vdc signal.
- No Idle consumption.
- Built-in redundant contactor turn-off (required by PL class D).
- Parallel safety connection[1]. Emergency shutoff will turn of the entire system.

Note 1: Requires D option on both AZX units.

Multi-Cabinet Parallel Configurations for High Power

MODEL	Output Phase Modes	Rated Power[1] AC / DC mode	High Voltage Range Vac L-N / Vdc	Max. Current High Vrange 3 Phs / Split / 1 Phs	Low Voltage Range Vac L-N / Vdc	Max. Current[2] Low Vrange 3 Phs / Split / 1 Phs	No. of Cabinets
3300AZX	3, 2 & 1	30 kVA 30 kW	0 ~ 440 Vac / 0 ~ ±650 Vdc	45 / 68 / 135 Arms 30 / 45/ 90 Adc	0 ~ 225 Vac / 0 ~ ±335 Vdc	90 / 117 / 270 Arms 60 / 90 / 180 Adc	One
3450AZX	3, 2 & 1	45 kVA 45 kW		65 / 72 / 195 Arms 40 / 45 / 120 Adc		110 / 125/ 330 Arms 80 / 90 / 240 Adc	One
3550AZX	3, 2 & 1	55 kVA 55 kW		75 / 75 / 225 Arms 50 / 50 / 150 Adc		130 / 130 / 390 Arms 100 / 100 / 300 Adc	One
3900AZX	3, 2 & 1	90 kVA 90 kW		130 / 144 / 390 Arms 80 / 90 / 240 Adc		220 / 250/ 660 Arms 160 / 180 / 480 Adc	Two
31100AZX	3, 2 & 1	110 kVA 110 kW		150 / 150 / 450 Arms 100 / 100 / 300 Adc		260 / 260 / 780 Arms 200 / 200 / 600 Adc	Two
31650AZX	3, 2 & 1	165 kVA 165 kW		225 / 225 / 675 Arms 150 /150 / 450 Adc		390 / 390 / 1170 Arms 300 / 300 / 900 Adc	Three
32200AZX	3, 2 & 1	220 kVA 220 kW		300 / 300 / 900 Arms 200 / 200 / 600 Adc		520 / 520 / 1560 Arms 400 / 400 / 1200 Adc	Four
Higher	For parallel system configurations above 220 kVA/kW up to 440 kVA/kW, contact factory						

Table 1: Model Number, Power Ratings & Current Ratings

Note 1: Rated power shown is for Three Phase or Single Phase mode operation. For Split Phase mode, rated power is 30kVA for the 3300AZX, 33kVA for the 3450AZX and 36.7kW for the 3550AZX.
Note 2: Rated current shown is per phase in Three or Two Phase mode operation. In Single Phase mode, current is three times Three Phase mode current.

Technical Specifications

OUTPUT	SPECIFICATION	
Power		
Single Phase Mode Three, Split Phase Mode	See Table 1 on page 9	
Voltage		
Modes	AC, DC, AC+DC, DC+AC	
	AC Mode	**DC Mode**
Low Voltage Range	0-225 V_{LN} / 0-390 V_{LL}	0 - 335 V_{dc}
High Voltage Range	0-440 V_{LN} / 0-760 V_{LL}	0 - 650 V_{dc}
Programming Resolution	0.01 V	
Accuracy	±0.1%	
Waveforms (200 Max.)	Sine, Square, Triangle, Clipped (THD), Arbitrary	
DC Offset	< 20 mV	
Harmonic Distortion (Vthd) *(full, resistive load, up to 440Vrms L-N)*	< 100 Hz: < 0.2% 100~1000 Hz: < 0.2% + 0.125%/100Hz	
Output Noise - Low V Range High V Range	< 250 mV RMS < 500 mV RMS	
Load Regulation	± 0.02% (CSC Mode)	
Line Regulation	< 0.1% for 10% Line Change	
Voltage Sense	External Sense, max. voltage drop 5% F.S.	
Voltage Slew Rate[1]	Programmable, 12.0V/µs max.	
Isolation		
Any Output Terminal to Chassis	1000 Vpk / 1000Vdc	
Frequency		
Range	DC, 1 – 15Hz[(2)], 15 – 1000 Hz	
Programming Resolution	0.01 Hz	
Accuracy	± 0.005% / 50 ppm	
Current *(See Figures 1 through 4 and Table 1)*		
Ranges	See Table 1	
Max. AC Peak Current per Phase, 2 or 3 Phase Mode	Low Vac Range: 360Apk High Vac Rang: 180Apk	
Programming Resolution	0.01 Arms	
Accuracy	0.25% F.S.	
Current Protection (CP) Modes	Constant Current (CC) or Output Trip (CV)	
Phase Angle *(In 3 and 2 Phase Mode)*		
Programmable Phase (B, C)	0 - 359.9°	
Resolution	0.1°	
Accuracy	±0.35° / ±0.1° Phase Reg. Mode	
Programmable Impedance (Per unit, incl. paralleled)		
Available Modes	Real-time mode, RMS mode	
Phase Mode	1 Phs / 3 Phs	2 Phs
Resistance (R)	±10 Ω	± 20 Ω
Inductance (L)	0 - 2 mH	0 - 4 mH
Output Capacitance / Max RMS Ripple Current		
Operating Mode	**High Range**	**Low Range**
Voltage Source	5.5 µF / 30 Arms	22 µF / 60 Arms
Current Source / Load	1.1 µF / 6 Arms	4.4µF / 12 Arms

PROTECTION	SPECIFICATION
Types	RMS Current, DC Current, Peak Current, Peak Voltage, True Power, Apparent Power, Internal Over Temperature, Advanced protection modes for regenerative devices

Footnotes:
1: Specified for 10%-90% or 90%-10% of Full scale voltage
2: Extends down to 1.0 Hz in Very Low Frequency (VLF) Mode. Derating applies

TRANSIENTS	Specification
Programming	
No. of Entries	200 Steps / 400 segments
Modes	LIST, PULSE, STEP
Parameters	Frequency, Volt AC, Volt DC, Waveform, Ramp Time, Dwell Time
Dwell Time Range	0.1 - 10000000.0 msec
Time Resolution	0.1 msec
Edit Modes	Add at end, Insert before, Delete
Execution	
Run Control	Run from step # to step # Run, Step, Restart, Stop
Execution Modes	Normal, Debug
Program Storage	
Non-volatile	100 Programs + Transients

MEASUREMENTS	SPECIFICATION
AC Voltage (Vrms)	
Single or Parallel Cab: Range	0 – 440 VLN / 0-760 VLL
Resolution	0.01 V
Accuracy	± 0.1% F.S.
Frequency (Hz)	
Fundamental Range	1 Hz - 1000 Hz
Resolution	0.01 Hz
Accuracy	± 0.1% Rdg
AC Current (Arms) - Single Cabinet	
Range[5]	High: 0-130 Arms / Low: 0-75 Arms
Resolution	0.01 Arms
Accuracy[2]	± (0.25% + f (kHz) * 0.25%) F.S.
Current Crest Factor	
Range	1.00 - 5.00
Resolution	0.01
Accuracy[2]	± 2.0% F.S.
AC or DC Power (W) - Single Cabinet	
Range[5]	0 - 55 kW
Resolution	0.01 kW
Accuracy[2]	± 0.75 % F.S.
Apparent Power (VA) - Single Cabinet	
Range[5]	0 - 55 kVA
Resolution	0.01 kVA
Accuracy[2]	± 0.75 % F.S.
Power Factor	
Range	0.00 - 1.00
Resolution	0.01
DC Voltage (Vdc)	
Range[3]	0 – 650 Vdc
Resolution	0.01 V
Accuracy	± 0.1% F.S.
DC Current (Adc) - Single Cabinet	
Range[5]	High: 0 - 100 Adc / Low: 0 - 50 Adc
Resolution	0.01 Adc
Accuracy[4]	± 0.25% F.S.

Footnotes:
1: Current and Power Ranges are for 3300AZX, 3450AZX and 3550AZX models
2: For RMS Currents above 2.0 A
3: Range = 0 - 1000 Vdc (w/Floating Neutral) or 0 - 1240Vdc (w/Grounded Neutral)
4: For DC current levels above 1.0 A
5: Current and Power Ranges scale with no. of units for parallel systems

Technical Specifications

WAVEFORM CAPTURE	SPECIFICATION
Parameters	VLN-A, VLN-B, VLN-C, VLL AB ,VLL AC ,VLL BC ,IA, IB, IC
Max. Sample Rate	500 ksps
Samples/cycle	1024 (512 in UPC Compatibility mode)
Record Length	1 Period of fundamental Frequency
Bandwidth	100 kHz @ 500 ksps

HARMONICS MEAS.	SPECIFICATION
Parameters	VLN-A, VLN-B, VLN-C, VLL AB ,VLL AC ,VLL BC ,IA, IB, IC
Harmonics Range	H1 ~ H50
Accuracy – Amplitude	± 1.0 % of RMS Reading
Phase Angle Range	0 ~ 359.9
Accuracy - Phase Angle	2 µsec
Bandwidth	100 kHz @ 500 ksps
Display Modes	Table format, Graph Format

AC INPUT	SPECIFICATION		
Mains Voltage Form	4 Wire, L1, L2, L3 and PE		
Frequency	47 - 63 Hz		
400V Input Setting (-4)	**3300AZX**	**3450AZX**	**3550AZX**
Output Power Rating	30.0 kW	45.0 kW	55.0 kW
Input Voltage Range	380 ~ 400Vac ± 10%		
Nominal Phase Current[1]	54 Arms	80 Arms	100 Arms
Max Current @ Low Line[1]	60 Arms	90 Arms	110 Arms
Peak Inrush Current[2]	< 130 Apk	< 150 Apk	< 150 Apk
Input Power Factor	> 0.99 @ Full Load		
Current THDi	< 2%		
Efficiency	89 %	90 %	90 %
480V Input Setting (-8)	**3300AZX**	**3450AZX**	**3550AZX**
Input Voltage Range	480Vac ± 10%		
Nominal Phase Current[3]	43 Arms	65 Arms	80 Arms
Max Current @ Low Line[3]	47 Arms	70 Arms	88 Arms
Peak Inrush Current[2]	< 110 Apk	< 120 Apk	< 120 Apk
Current THDi	< 2%		
Input Power Factor	> 0.99 @ Full Load		
Efficiency	89 %	90 %	90 %

Footnotes:
1: For nominal 3ø, 380V input voltage. Low line voltage is 342V
2: Ipeak Inrush = @ nominal input voltage
3: For nominal 480V input voltage. Low line voltage is 432V.

ENVIRONMENTAL	SPECIFICATION
Cooling	Variable speed fan cooled, front intake, top exhaust
Temperature Operating	0 to 40 °C / 32 to 104 °F
Storage	-20 to 70 °C / -4 to 158 °F
Humidity	< 80%, non-condensing
Altitude	2000 m / 6500 feet

INTERFACES	DESCRIPTION
Remote Control	
USB	Device Type B
RS232	1200 - 921600 baud
LXI LAN eXtensions for Instrumentation — LAN	LXI compliant, Ethernet, RJ45, TCP/IP Protocol, Telnet Protocol Command Line
GPIB	IEEE488,1, IEEE488.2 (2003 incl., NI HS488) IEC 60488-1, IEC 60488-2 (2004)
	Functions: SH1, AH1, T6, L3, SR1, RL1, DC1, DT1
WiFi	Optional USB WiFi adaptor available

SYSTEM FEATURES	DESCRIPTION
DISPLAY	
Type	Full Color, Touch LCD Display
Size	4.3" Diagonal
Resolution	480 x 272 pixels
USB Ports	2 Front Panel, 1 Rear Panel, Type A
SD Card	32 GB max. Capacity
Video Output	Monitor Out, Front Panel

ANALOG I/O	SPECIFICATION
Analog Inputs (4)	
Modes	Amplifier, Amplitude Modulation, Int + Ext Input Summing
AI1, AI2, AI3	Programmable setting phase A, B, C
AI4	Frequency
Range	0 -10 Vdc for 0 - F.S.
Accuracy	± 0.1% F.S.
Input Impedance	5 kOhm
Analog Outputs (4)	
AO1, AO2, AO3	Voltage Meas. phs A, B, C
AO4	Power Measurement Total
Range	0 - 10Vdc for 0 - F.S.
Accuracy	± 0.1% F.S. into > 5 kOhm load
Output Impedance	5 kOhm
Connector Type	DB25, Rear Panel

DIGITAL I/O	SPECIFICATION
Digital Inputs (6)	
Fixed (3)	Remote Inhibit, Transient Trigger, Phase Sync
User Programmable (3)	DI1, DI2, DI3
Input Levels	Low < 0.4V, High > 2.0V
Digital Outputs (6)	
Open Collector, Fixed (2)	Relay Control FORM, Relay Control T Option
TTL, Fixed (2)	Output Relay/Transient /Function Strobe Phase Sync
User Programmable (2)	DO1, DO2
Output Levels	Low < 0.4V, High > 4.6V
Connector Type	DB25, Rear Panel

MECHANICAL	SPECIFICATION
Dimensions	
H x W x D	59.8"x 24.0" x 31.9" 1520 x 610 x 810 mm
Shipping H x W x D	71" x 32" x 44" 1800 x 810 x 1120 mm
Weight	
Net	517 Kg / 1140 lbs
Shipping	592 Kg / 1305 lbs

REGULATORY	SPECIFICATION
Safety	IEC 61010-1:2010 (Edition 3)
EMC	
Emissions Standard	EN 55011:2009+A1:2010
Immunity Standard	EN 61000-4-2, -3, -4, -5, -6, -8, -11
Product Category	EN 61326-1:2013 (Measurement, Laboratory and Control Equipment)
Approvals	CE Mark
RoHS (DIRECTIVE 2011/65/EU)	
Product Category	EN50581:2012

PACIFIC POWER SOURCE

Ordering Information

AZX Series Models

Single Cabinets

3300AZX
3450AZX
3550AZX

Parallel Systems

3900AZX
31100AZX
31650AZX
32200AZX

Note 1: Contact Factory for higher power AZX system configurations.

Input Voltage (V_{IN}) Identifier

-4 380-400Vac 3ø ±10%, 47-63Hz
-8 480Vac 3ø ±10%, 47-63Hz

Export Version postfix

-E Append "E

Options

B For use with ECTS2 System
C IEC413 Interharmonics
D Safety Performance Level D
H Real Time I/O for PHIL
L Electronic Load Mode
W Isolated Neutral Wiring

Order Example 3550AZX-4CLW

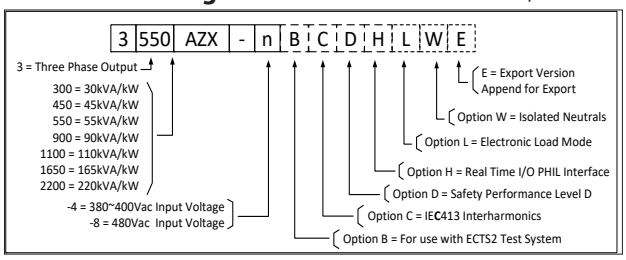
- AZX Cabinet, 55 kVA, 3-Phase, AC & DC Regenerative Power Source, 380~400Vac input, IEC413, Load option , isolated Neutrals

Typical Delivery Items

- Power Source
- Cert. of Compliance

AZX Model Configurator

Dashed boxes are optional.



SmartSource Suite Test Sequence Options

Test Sequences

- IEC Test Suite - Includes IEC 61000-4-11p, IEC 61000-4-14, IEC 61000-4-17, IEC 61000-4-27p, IEC 61000-4-28, IEC 61000-4-29p and IEC 61000-4-34p
- IEC 61000-4-13 (Option C)
- MIL-STD 1399-300B & -300-1 - US
- DoD, Shipboard Power, AC Power Groups
- IEEE 1547.1-2020
- Semi-F47-0706
- KS C 9610-4-11, KS C 9610-4-29

Test Sequences - Avionics

- ABD0100.1.8 - Airbus A380, AC & DC Power Groups
- ABD0100.1.8.1 - Airbus A350, AC & DC Power Groups
- AMD24C - Airbus A400M, AC & DC Power Groups
- Boeing 787B3-0147 - B787, AC & DC Power Groups
- MIL-STD704 - US DoD, AC & DC Power Groups
- RTCA-DO160 Section 16, AC & DC Power Groups

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