

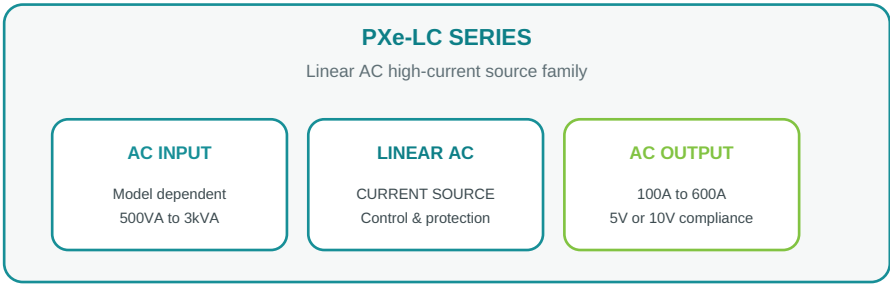
PXe-LC Series AC High Current Calibrators

Programmable AC current source | up to 600A | 5V & 10V compliance | 40-500Hz

PX Electronics PXe-LC Series AC High Current Calibrators provide programmable low-voltage, high-current AC output for calibration, verification, current injection and electrical component testing.

The expanded series is available from 500VA to 3kVA, with model current ratings from 100A to 600A AC. Two compliance-voltage families are offered: 0-5V for very low-impedance, higher-current circuits and 0-10V where additional voltage is required to establish the programmed current through the complete test loop.

Output frequency is programmable from 40 to 500Hz, covering 50Hz, 60Hz and 400Hz test points. Linear amplification is used to generate a controlled sine-wave current source, while selected configurations provide local measurement and RS485 Modbus integration for automated calibration and production test systems.



Where this product fits

The PXe-LC Series is intended primarily as a programmable AC current source rather than a general-purpose AC power supply. It is suited to current transformers, current sensors, shunts, ammeters, protection devices, conductors and other low-impedance circuits where the required current must be established within a defined compliance voltage.

The correct model is selected from the required current, test frequency, complete loop impedance and duty cycle.

Up to 600A AC
 High-current configurations from 100A to 600A, depending on selected compliance voltage and power rating.

5V & 10V Compliance
 Choose the voltage headroom required to overcome DUT, cable, terminal and reference-component impedance.

40-500Hz Operation
 Programmable frequency supports 50Hz, 60Hz, 400Hz and other defined test points across the range.

Automation Ready
 Selected configurations provide local measurement and RS485 Modbus for computer, PLC and test-system integration.

Power range	Current range	Compliance	Frequency
500VA to 3kVA	100A to 600A	0-5V / 0-10V AC	40-500Hz programmable

Selection starting point

Confirm the maximum required AC current, operating frequency, expected test-loop impedance, required compliance voltage, test duration, lead length and conductor size, connection method, remote-control requirements and any calibration or traceability requirement. PX can then confirm the appropriate LC configuration.

Series Range and Compliance Voltage

Available PXe-LC output configurations and practical model selection

- | | | | |
|---|---|---|---|
| 1. Required current
Define maximum AC injection or calibration current. | 2. Compliance voltage
Determine voltage required across the complete test loop. | 3. Frequency & duty
Confirm 40-500Hz operating point and test duration. | 4. Integration
Local operation, RS485 Modbus and reference measurement needs. |
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0-10V Compliance Series

For applications where additional voltage is needed to establish the required current through the complete circuit.

Power rating	Compliance voltage	AC current range
1kVA	0-10V AC	0-100A
1.2kVA	0-10V AC	0-120A
1.5kVA	0-10V AC	0-150A
2kVA	0-10V AC	0-200A
2.5kVA	0-10V AC	0-250A
3kVA	0-10V AC	0-300A

0-5V Compliance Series

For very low-impedance circuits where higher current is required but less compliance voltage is needed.

Power rating	Compliance voltage	AC current range
500VA	0-5V AC	0-100A
1kVA	0-5V AC	0-200A
1.5kVA	0-5V AC	0-300A
2kVA	0-5V AC	0-400A
2.5kVA	0-5V AC	0-500A
3kVA	0-5V AC	0-600A

Understanding compliance voltage

Compliance voltage is the maximum voltage available to drive the programmed current through the complete test loop. The loop includes the DUT, output cables, terminals, connectors, reference measurement components and any additional series impedance. A higher current rating does not remove this relationship. The programmed current must remain achievable within the voltage capability of the selected LC model.

5V or 10V?

Use a 5V configuration where the circuit is extremely low impedance and higher current is required. Select 10V where cable resistance, terminations or the DUT require more voltage headroom. Where loop impedance is uncertain, PX can review the proposed current, cables, DUT and test duration before the final model is selected.

Series rating note

The current ranges above define the available family configurations. Detailed input requirements, dimensions, weight, measurement performance and protection arrangements can vary with rating and are confirmed at quotation. The existing 1.2kVA / 120A / 10V unit remains the detailed reference configuration within the range.

Performance, Measurement and Control

Reference performance for the established PXe-110001.2LC configuration

The expanded PXe-LC family now extends beyond the original 120A model. The detailed performance figures below are therefore presented as reference data for the established PXe-110001.2LC 1.2kVA / 120A / 10V configuration. Equivalent guaranteed figures for other current ratings are confirmed with the selected model.

Specification	Reference value	Specification	Reference value
Capacity	1.2kVA	Input	230V AC +/-10%, 1 phase
Input frequency	47-63Hz	Compliance voltage	0-10V AC
Output current	0-120A AC	Output frequency	40-500Hz, 0.1Hz steps
Circuit mode	Linear amplification	Waveform	Pure sine wave
Voltage regulation	+/-0.1%	Load regulation	+/-0.5%
THD	0.8% at resistive load	Current resolution	0.001A
Voltage resolution	0.1V	Frequency measurement resolution	0.01Hz
Voltage measurement accuracy	0.5% FS + 5 digits	Current measurement accuracy	0.5% FS + 5 digits
Power measurement accuracy	0.8% FS + 5 digits	Frequency measurement accuracy	0.01% FS + 5 digits
Voltage setting accuracy	0.5% FS	Frequency setting accuracy	0.1% FS
Display	V, A, RMS A, Hz, W, PF	Communication	RS485 Modbus
Protection	Overcurrent, overtemperature, short circuit, overload	Enclosure	IP20
Operating environment	0-40 deg C; 20-95% RH	Dimensions / weight	430 x 550 x 440mm / 60kg

Linear Current Source

Linear amplification provides a controlled sine-wave output. The reference 120A model has published THD of 0.8% at resistive load, with voltage regulation of +/-0.1% and load regulation of +/-0.5%.

Integrated Measurement

The reference model displays voltage, current, RMS current, frequency, power and power factor. Published internal current measurement accuracy is 0.5% FS + 5 digits.

Remote Integration

RS485 Modbus allows the reference configuration to be incorporated into computer-controlled calibration benches, PLC systems and automated production test equipment.

Calibration and specification basis

The internal display and measurement functions are useful for setting and monitoring the source, but they should not automatically be treated as the traceable reference measurement for a formal calibration procedure. Where defined uncertainty or traceability is required, an appropriate reference instrument and calibration arrangement should be specified separately.

A separate guaranteed current-source setting accuracy is not presently defined in the available reference data. The earlier source also contains conflicting frequency-regulation values, so no guaranteed frequency-regulation figure is stated in this revised family datasheet.

Applications and High-Current Test Connections

Practical use of the PXe-LC Series across calibration, current injection and component testing

Typical Calibration and Test Applications

Current sensor calibration	Current transformer testing	AC current probe verification
Clamp meter calibration	Ammeter verification	Current transducer testing
Current shunt verification	Power analyser channel checks	Energy meter input testing
Protection relay testing	Circuit-breaker verification	AC current injection
Cable & conductor testing	Busbar testing	Contact & connection testing
Transformer / magnetic testing	Automated production testing	R&D; / component development

High-Current Test Loop Considerations

At several hundred amps, the output leads and connections become part of the electrical test system. Lead resistance, terminal resistance, contact quality, reference components and DUT impedance all consume part of the available compliance voltage. Cable and fixture heating also become more significant as current and test duration increase.

Define the complete test loop

Confirm:

- Required AC current and frequency
- DUT resistance or impedance
- Test-lead length and conductor cross-section
- Terminal and connection resistance
- Reference shunt or measurement device
- Test duration and duty cycle
- Cable and fixture heating

Connection practice

At higher current, short and appropriately sized conductors help reduce voltage drop and temperature rise. The connection method should be defined at quotation stage where PX supplies leads or fixtures. The available current is always subject to the selected 5V or 10V compliance limit across the complete circuit.

Calibration and traceability

The PXe-LC provides a controlled current source suitable for use within calibration and verification systems. Where formal traceability or a defined measurement uncertainty is required, specify the reference standard, calibration method, required test points and supporting documentation at order stage. Application-specific current and frequency points can also be agreed for factory verification.

Communications and automation

The established 1.2kVA / 120A configuration provides RS485 Modbus for external computers, PLCs and automated test systems. Communication and measurement requirements for other PXe-LC ratings should be confirmed with the selected configuration.

Application Notes

CT & Current Sensor Testing

Programmable 50Hz, 60Hz, 400Hz and wider-frequency current points can be used for current transformer, sensor and transducer evaluation. Reference instrumentation can be included where formal calibration is required.

Relay & Breaker Current Injection

Controlled AC current can be applied to protection devices for pickup, response and functional verification, subject to the selected compliance voltage and test duty.

Shunt, Ammeter & Meter Verification

The LC can establish defined current points for shunts, ammeters and current-input channels. A suitable reference measurement arrangement should be used where traceable results are required.

Conductors, Busbars & Components

High-current configurations support low-impedance component and connection testing. Cable size, termination resistance, fixture design and thermal rise should be considered at the required current and duration.

Ordering, Configuration and Project Support

Information required to select the correct current range, compliance voltage and test arrangement

Series configuration

Power ratings from 500VA to 3kVA are available. The 10V compliance family extends to 300A; the 5V compliance family extends to 600A. Frequency is programmable from 40 to 500Hz. Input supply, enclosure details and model-specific technical performance are confirmed for the selected rating.

Reference configuration

PXe-110001.2LC: 1.2kVA, 230V single-phase input, 0-120A AC output, 0-10V compliance, 40-500Hz programmable frequency, linear amplification, local measurement, RS485 Modbus and IP20 enclosure.

Information required to prepare a quotation

Requirement	Information to provide
Application	CT, current sensor, shunt, probe, relay, breaker, conductor, busbar or other DUT
Required current	Minimum, normal and maximum AC test current
Frequency	Required operating point between 40Hz and 500Hz
Test-loop impedance	Known DUT impedance plus estimated cable, terminal and reference-component impedance
Compliance voltage	Expected voltage required to establish the maximum current, if known
Duty cycle	Continuous, timed test point or repeated automated sequence
Test leads	Required length, conductor cross-section and termination method
Measurement	Internal monitoring requirement and any external reference instrument
Remote control	Local operation or RS485 Modbus integration
Calibration / documentation	Required reference method, certificates, factory verification or project records

Project Support

Application Review
Current, frequency, DUT and complete test-loop assessment.

Model Selection
5V or 10V compliance and current rating matched to the application.

Verification
Agreed AC current and frequency operating points and reference measurement needs.

Integration
RS485 Modbus, test leads, fixtures and automated-system requirements.

Model-specific confirmation

The maximum current shown for each PXe-LC configuration assumes the programmed current can be established within the available compliance voltage. Cable resistance, terminal resistance, DUT impedance, reference components and test duration can all affect the achievable operating point. For the expanded ratings, final input requirements, dimensions, weight and guaranteed performance figures are confirmed at quotation.

Discuss your requirement

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