

ACX SERIES

AC POWER SOURCES

OPERATION MANUAL



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ACX-SERIES

OPERATION MANUAL

FOR THE

MODELS
110ACX
115ACX
118ACX

PPS PART NO. 150118-10

THIS MANUAL ASSIGNED TO S/N : _____

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SIXTH EDITION

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SECTION 1

GENERAL

1 GENERAL

This manual provides information required to properly use one of the ACX Series AC Power Source models. This is a general Operations Manual and it describes the operation of the basic power source. Installation, operation, and calibration are the subjects covered. At this time, there are three models available in the ACX Series:

Model	Maximum Output Power VA
110ACX	1000 VA
115ACX	1500 VA
118ACX	1800 VA

All ACX models are configured with a digital UPC (Universal Programmable Controller). Detailed operating instruction and control and metering specifications are described in the ***UPC Series Operation Manual*** which is supplied with the unit.

1.1 USING THIS MANUAL

This manual provides instructions for installation and use of the ACX Series Power Source equipment. For this reason, it is very important that the user reads sections 1 GENERAL information, 3 INSTALLATION, and 4 OPERATION, prior to using this equipment. A thorough understanding of these sections is required to safely and properly operate this equipment.

Section 2 lists the specifications of the equipment. Knowledge of this information is required to gain maximum use of this equipment for a given application. The user is encouraged to read this section in order to gain a deeper understanding of the capabilities of the ACX Power Source.

Sections 5 and 6 list MAINTENANCE and CALIBRATION requirements of this equipment. Refer to these sections when either maintenance or calibration is required.

Section 7 describes SERVICE methodology and provides system, sub-assembly, and component part numbers to aid the operator in making any *factory authorized* field repairs.

Section 8 contains the INDEX for this manual.

Section 9 contains product change notices, errata, and data relative to customer specified modifications. Read Section 9 before operating the equipment. This is especially true when modifications (MODs) have been installed, since these can change system operation.

If questions arise while reading this manual, the user is encouraged to call the Pacific Power Source customer service department. Pacific maintains a toll-free number: 1-800-854-2433 or use +1 (949) 251-1800.

1.2 SAFETY NOTICES

The ACX is capable of transferring very large amounts of electrical energy very quickly. This basic quality is fundamental to any high-performance power source. The warnings and cautions listed below should be observed at all times.

WARNINGS are conditions which are hazardous to user personnel. All warnings throughout this manual will be formatted as shown below. A condition which is hazardous to both personnel and equipment will be issued as a warning.

CAUTION statements indicate a dangerous situation which may damage the equipment but is not a threat to life or limb. Cautions will assume the format shown on page 3. All cautions should be rigorously observed.

CONSIGNES de SECURITÉ

La ACX est en mesure de transférer des forts niveaux d'énergie électrique et cela de manière très rapide. Cette caractéristique est une qualité fondamentale pour ce type d'équipement haute performance. Les règles de sécurité, avertissements et précautions décrits ci-dessous doivent être observés à tout moment.

Attention! (Avertissements): conditions dangereuses pour le personnel utilisateur. Tout les avertissements dans ce manuel seront formatés et indiqués comme ci-dessous. Toute condition qui peut être dangereuse à la fois pour le personnel utilisateur et l'équipement sera indiquée comme avertissement.

Précautions: elles indiquent une situation dangereuse pouvant endommager l'équipement, mais qui n'est pas une menace pour la vie ou un danger pour un membre. Les messages de précautions seront formatés comme sur la page 3 tout au long ce manuel et doivent être observés rigoureusement.



WARNING ATTENTION

THIS EQUIPMENT CONTAINS HIGH ENERGY, LOW IMPEDANCE CIRCUITS!!
LETHAL POTENTIALS ARE CONTAINED WITHIN THE CABINET.

CARE MUST BE EXERCISED WHEN SERVICING THIS EQUIPMENT
TO PREVENT SERIOUS OPERATOR INJURY OR EQUIPMENT DAMAGE.

VOLTAGE AT THE TERMINALS RESPONDS INSTANTLY WHEN THE OUTPUT IS ACTIVATED.

OBSERVE THE FOLLOWING WHEN SERVICE, MAINTENANCE, OR CALIBRATION ARE REQUIRED:

1. REMOVE ALL JEWELRY FROM HANDS, ARMS AND NECK WHEN SERVICING THIS EQUIPMENT. THIS PREVENTS THE POSSIBILITY OF SHORTING THROUGH THE JEWELRY AND CAUSING BURNS OR ELECTROCUTION OF THE OPERATOR.
2. WEAR SAFETY GLASSES WHEN SERVICING THIS EQUIPMENT TO PREVENT EYE INJURY DUE TO FLYING PARTICLES CAUSED BY ACCIDENTAL SHORT CIRCUIT CONDITIONS.
3. DO NOT REMOVE ANY PANEL OR COVER WITHOUT FIRST REMOVING THE INPUT SERVICE BY OPENING ALL CIRCUIT BREAKERS.
4. SERVICE OTHER THAN EXTERNAL CLEANING SHOULD BE REFERRED TO PERSONNEL AUTHORIZED BY THE FACTORY TO SERVICE THIS EQUIPMENT.

CET EQUIPEMENT CONTIENT DES CIRCUITS ELECTRIQUES DE FORTE ENERGIE ET A FAIBLE IMPEDANCE!! DES POTENTIELS A CARACTERE MORTEL SONT CONTENUS A L'INTERIEUR DE L'EQUIPEMENT.

UNE ATTENTION PARTICULIERE EST IMPERATIVE DANS LE CADRE DU SERVICE DE CET EQUIPEMENT AFIN DE PREVENIR TOUT RISQUE POUVANT ENTRAINER UN ACCIDENT DE L'OPERATEUR OU UN DOMMAGE DE L'EQUIPEMENT.

LA TENSION AUX BORNES DE SORTIE DE L'EQUIPEMENT EST PRESENTE INSTANTANEMENT LORSQUE LA SORTIE EST ACTIVEE.

LES REGLES DE SECURITE SUIVANTES DOIVENT ETRE SUIVIES DANS LE CADRE DU SERVICE, DE LA MAINTENANCE OU DE LA CALIBRATION DE L'EQUIPEMENT:

1. OTER TOUS LES BIJOUX DES MAINS, BRAS ET COU PENDANT LE SERVICE DE L'EQUIPEMENT AFIN DE PREVENIR TOUT RISQUE DE COURT-CIRCUIT PAR L'INTERMEDIAIRE DES BIJOUX QUI POURRAIT CONDUIRE A DES BRULURES OU ELECTROCUTION DE L'OPERATEUR
2. PORTER DES LUNETTES A VERRE DE SECURITE PENDANT LE SERVICE DE L'EQUIPEMENT AFIN DE PREVENIR TOUT RISQUE D'ACCIDENT OCULAIRE POUVANT PROVENIR DE PARTICULES VOLANTES CREEES DANS DES CONDITIONS DE COURT-CIRCUIT ACCIDENTELLES.
3. NE JAMAIS OTER OU RETIRER DES PANNEAUX OU COUVERCLES DE PROTECTION SANS AVOIR AU PREALABLE COUPER LE CIRCUIT D'ALIMENTATION DE L'EQUIPEMENT.
4. TOUT AUTRE SERVICE QUE LE NETTOYAGE EXTERNE DE L'EQUIPEMENT NECESSITE L'INTERVENTION DE PERSONNEL QUALIFIE ET AUTORISE PAR L'USINE POUR CETTE MAINTENANCE

1.2 SAFETY NOTICES (continued)



WARNING ATTENTION

IF THIS EQUIPMENT IS NOT USED IN A MANNER SPECIFIED BY THE MANUFACTURER,
THE PROTECTION PROVIDED BY THE EQUIPMENT MAY BE IMPAIRED

SI CET EQUIPEMENT N'EST PAS UTILISE D'UNE MANIERE SPECIFIEE PAR LE FABRICANT,
LA PROTECTION FOURNIE PAR L'EQUIPEMENT PEUT ETRE ALTEREE



CAUTION PRECAUTION

READ SECTIONS 1, 3, AND 4 OF THIS MANUAL
BEFORE INSTALLING OR OPERATING THIS EQUIPMENT.

LIRE LES CHAPITRES 1,3 ET 4 DE CE MANUEL
AVANT L'INSTALLATION ET L'UTILISATION DE CET EQUIPEMENT

1.2 SAFETY NOTICES (continued)

SAFETY SYMBOLS
SIGNIFICATION DES SYMBOLES DE SECURITE

1		Alternating current Courant Alternatif
2		Earth (ground) Terminal Borne de Terre
3		Protective Conductor Terminal Borne Protectrice de Conducteur
4		On (Supply) Allumé (On, sous tension)
5		Off (Supply) Eteint (Off, hors tension)
6		Caution, risk of electric shock Attention, risque de choc électrique
7		Caution, risk of danger Attention, danger

1.3 GENERAL PRODUCT DESCRIPTION

The ACX Power Source is a high-performance AC power conversion instrument. It is intended for indoor use and the chassis is designed to fit into a standard 19 inch instrument rack or to be used on any test bench surface. The power source is suitable for use as a frequency converter as well as for sophisticated AC test power generation.

These power sources are configured with a digital controller. Controller type is:

UPC1 for sophisticated programmable control - provides all of the manual control capability, plus a wide variety of additional features including program storage, waveform editing, and remote interface (Serial standard or GPIB optional).

Model ACX has dual-range output voltage capability, able to operate at either 0-150 volts or 0-300 volts. When operated in the high voltage range, the output may be used as either a single-ended or split-phase configuration. The phase separation of L1 and L2 is fixed at 180 degrees in that case. Optional output transformers can be provided for higher or lower voltage range.

Output power is up to 1.8kVA at any nominal input voltage from 115 to 240 Vac.

External Voltage Sense capability is provided and will display the actual voltage at the remote sense location. The CSC (Continuous Self Calibration) feature will allow the controller to regulate the voltage at the sense location.(CSC)

Output voltage and current metering is provided on the system display. Specifications of the metering functions are described in the *UPC Series Operation Manual*.



FIGURE 1.3 ACX SERIES POWER SOURCE - FRONT VIEW

SECTION 2

SPECIFICATIONS

2 SPECIFICATIONS

This section states the electrical and mechanical specifications of the ACX Power Source. Some specifications are controller dependent and are noted as such.

2.1 ELECTRICAL SPECIFICATIONS

2.1.1 INPUT POWER REQUIREMENTS

The following input power forms are accepted by the ACX

INPUT VOLTAGE

The Model ACX accepts any single phase input voltage of 115-240 Vac, 50Hz or 60 Hz Nominal and is tolerant of transient overvoltages typically present on the AC MAINS power distribution lines.

INPUT CURRENT

The input current required by the ACX varies by model based on their maximum full rated load. AC input currents shown below apply to model 118ACX for most common nominal line voltages. Recommended input service is also stated. Lower power ACX models have proportionally lower AC input currents. Overload conditions will result in higher input currents that still fall within the recommended input service. However, at low AC line voltages, the AC input current is electronically limited at 25Arms. This allows full rated power down to 115V -10% or 103VAC L-N (Low Line Voltage).

NOTE: In low voltage operations the max input current is electronically limited to **25A_{RMS} maximum**. At least 12AWG input cable wire is recommended.

V_{in}	INPUT CURRENT	SERVICE RECOMMENDED
103 VAC	25 A _{rms}	30 A
110 VAC	24 A _{rms}	30 A
120 VAC	22 A _{rms}	30 A
200 VAC	13 A _{rms}	20 A
208 VAC	13 A _{rms}	20 A
220 VAC	12 A _{rms}	15 A
230 VAC	12 A _{rms}	15 A
240 VAC	11 A _{rms}	15 A

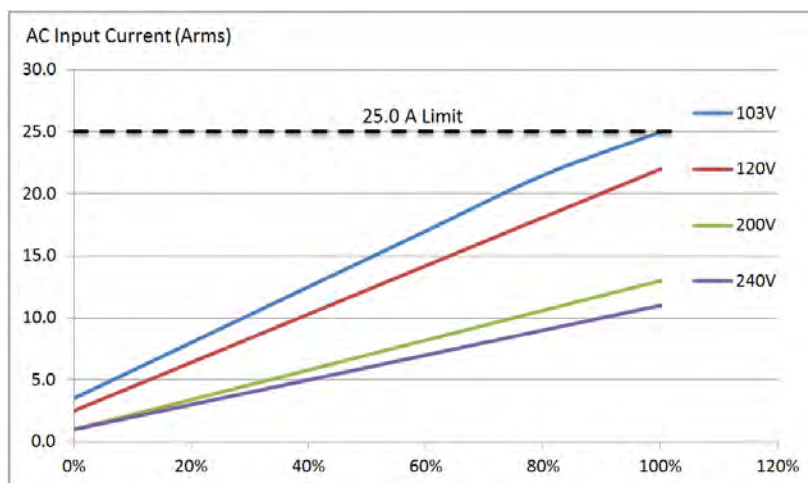


FIGURE 2.1 INPUT CURRENT VS. OUTPUT POWER FOR MODEL 118ACX

2.1.2 OUTPUT POWER

OUTPUT VOLTAGE RANGE

The standard output voltage ranges of the ACX are:

- 0-150 Vac when operated in low range (FORM 1)
- 0-300 Vac when operated in high range (FORM 2)

OUTPUT CURRENT

FULL-RATED CURRENT

The full-rated output current of the ACX Power Source by model is:

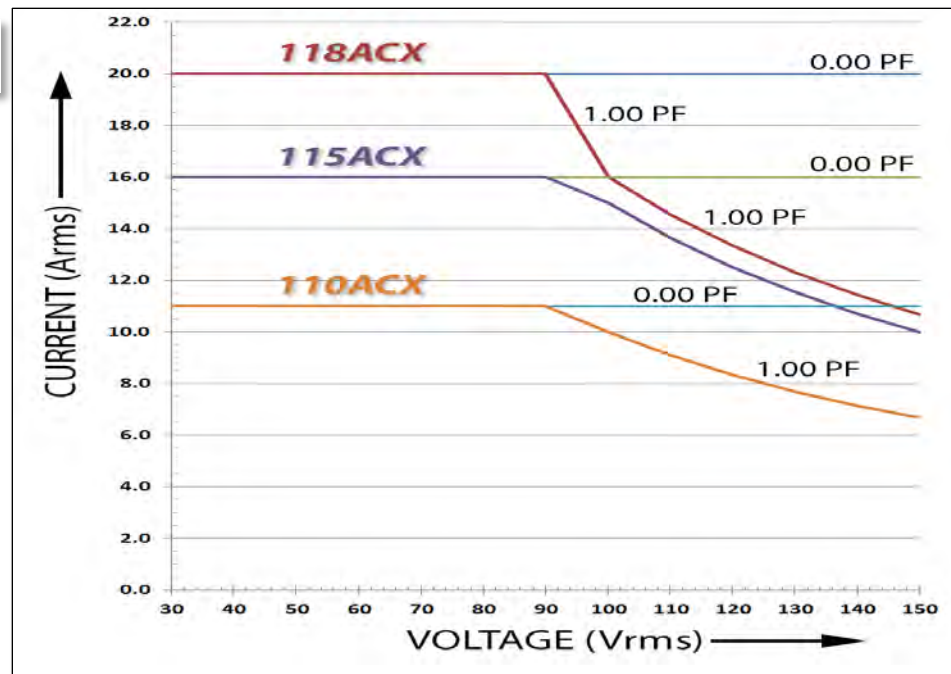
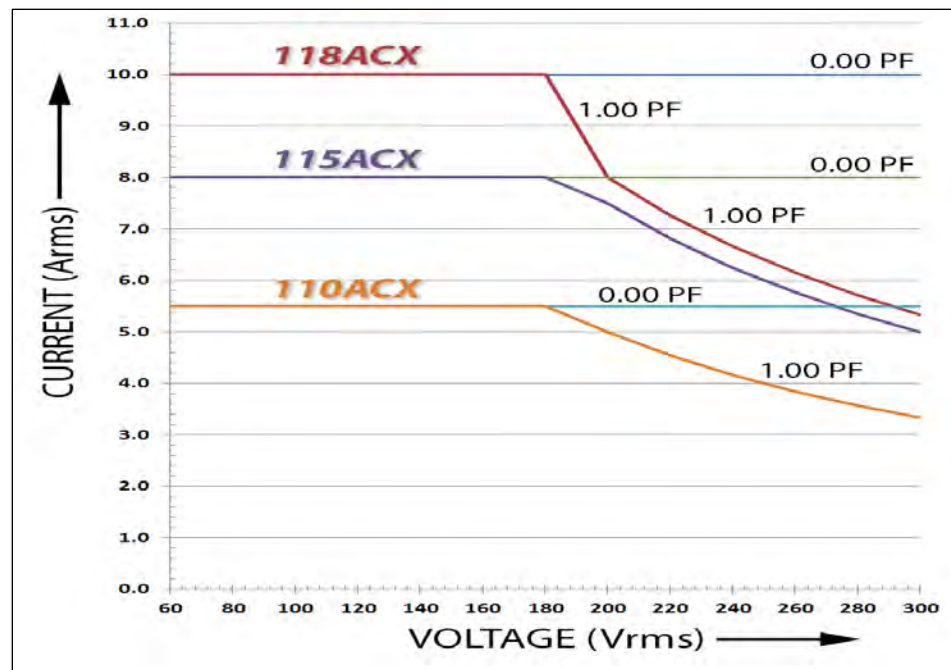
Model	1 ϕ				2 ϕ		
	I _{out, rms}	I _{max, rms}	I _{out, pk}		I _{out, rms}	I _{max, rms}	I _{out, pk}
110ACX	11 A	16.5 A	22 A		5.5 A	8 A	11 A
115ACX	16 A	24 A	32 A		8 A	12 A	16 A
118ACX	20 A	30 A	40 A		10 A	15 A	20 A

Refer to the Rating Curve charts of Figure 2.2 for maximum output current at a specific output form, voltage, or power factor by model number.

OVERLOAD OPERATION

The ACX Power Source can deliver up to 120% of rated RMS output current at 25°C ambient temperature with any input line voltage of 100 Vac or higher. However, total output power may be limited by the AC input current limit at input voltage of 115V or less. Elevated ambient temperature, low input voltage, or power factors between 0.8 and 1.0 will increase the internal dissipation of the power source and can cause shutdown due to over-temperature conditions. Length of time to reach over-temperature varies with the above parameters.

NOTE: All ACX Models are equipped with an over power protection feature. See section 4.10 for more details.

150V Range**300V Range**

Rated continuous load current as a function of Power Factor and Output Voltage – Nominal Input Line. Short term overloads to 120% are permitted. Operating time before thermal shutdown or circuit breaker trip will vary from seconds to several minutes depending upon line and temperature conditions.

FIGURE 2.2 OUTPUT RATING CURVES BY MODEL

2.1.3 OUTPUT POWER FACTOR

The ACX Power Source is designed to operate into any load power factor. However, the Rating Curve charts of Figure 2.2 should be consulted for system capabilities at specific output power factors. The amount of heat generated by the amplifier increases as the power factor approaches 1.

2.1.4 OUTPUT FREQUENCY

The output frequency range of the ACX Power Source is determined by the controller which is installed in the system. Refer to the appropriate controller manual for output frequency specifications.

2.1.5 OUTPUT DISTORTION

The output distortion of the ACX Power Source is typically:

- less than 0.25% THD for output frequencies in the range of 15 to 200 Hz
- less than 0.50% THD for output frequencies in the range of 200 to 800 Hz
- less than 1.00% THD for output frequencies in the range of 800 to 1200 Hz

Distortion specification applies under full Resistive load condition.

2.1.6 OUTPUT LOAD REGULATION

Uncompensated load regulation of the ACX Power Source is typically:

- less than 1.5% for output frequencies in the range of 15 to 200 Hz
- less than 2.0% for output frequencies in the range of 200 to 800 Hz
- less than 3.5% for output frequencies in the range of 800 to 1200 Hz

2.1.7 INPUT LINE REGULATION

Input line regulation of the ACX Power Source is less than 0.1% for a $\pm 10\%$ change in line voltage (provided, input line voltage remains within the specified range).

2.1.8 OUTPUT BANDWIDTH

The output bandwidth of the ACX Power Source is:

Full Power:	15	to	200 Hz	(± 0.10 db [$\pm 1\%$])
	200	to	800 Hz	(± 0.25 db [$\pm 3\%$])
	800	to	1200 Hz	(± 0.36 db [$\pm 4\%$])

Small Signal:	5	to	5,000 Hz	(± 0.5 db [$\pm 6\%$])
	(rated at 10% of full-scale output voltage)			

2.1.9 LOAD TRANSIENT RESPONSE

Output load transient response and recovery time is approximately: 80 μ sec. for a 10-90% load induced step transient

2.1.10 OUTPUT DC OFFSET

The DC offset present on the output is: < 20 mVDC.

2.1.11 OUTPUT PROTECTION

The output of the ACX Power Source is protected through the use of electronic current limiting. The output will automatically recover when the output fault is removed. Thermal overload protection is also provided. Refer to paragraph 2.3.5 for details.

The universal AC output socket that is located on the front of the ACX is limited to 10 A(RMS) operation. It is protected by a 10A circuit breaker located at the rear of the power source. If the current draw at the socket exceeds the 10A rating, the circuit breaker will disconnect power to the socket. Reduce the load at the socket and press the circuit breaker button to reset.

NOTE: The digital controller also provides programmable current limit.
Refer to the *UPC Series Operation Manual* for details.

2.1.12 OUTPUT CONTROL CHARACTERISTICS

Output control characteristics, sync I/O signals, and metering capabilities are determined by the controller which is installed. Refer to the *UPC Series Operation Manual* for details.

2.1.13 OUTPUT ISOLATION

The output of the ACX is galvanically isolated from the chassis and input power. Output Neutral to Chassis voltage is allowed to be 150 VAC, maximum. See paragraph 3.4, Output Power Connection, for grounding information.

2.2 MECHANICAL SPECIFICATIONS

The ACX Power Source mechanical characteristics are:

2.2.1 DIMENSIONS AND WEIGHT

Parameter	Value	Notes
Height:	3.5" / 89 mm	2U rack mountable units
Width:	19.00" / 483 mm	Front panel with mounting brackets
	16.75" / 426 mm	Main chassis
Depth:	23.62" / 600 mm	Measured from back side of front panel, excludes terminal blocks
Weight:	40 lbs. / 18.2 kg	

2.2.1 DIMENSIONS DRAWINGS

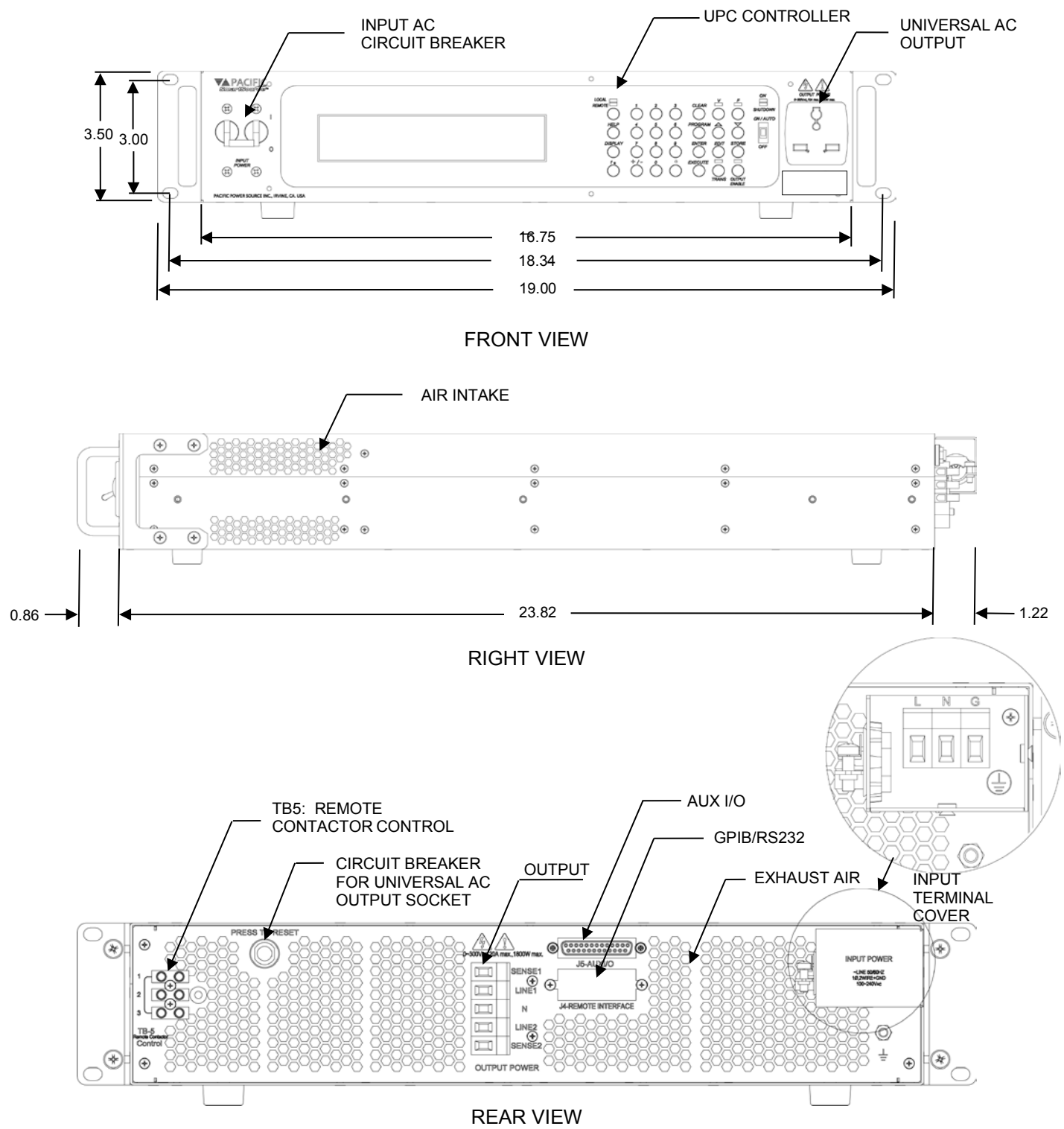


FIGURE 2.3 OUTLINE DRAWING

2.2.2 INPUT POWER CONNECTION

Input power is brought into the ACX at the Input Power terminal block on the rear panel.

2.2.3 OUTPUT POWER CONNECTION

Output power is taken from the ACX Power Source via rear panel mounted terminal blocks. Remote Sense terminals are also provided at this terminal block.

Terminal block TB5 on the rear of the ACX may be used to remotely enable/disable the output of the power source. An electrical connection between terminals TB5-1 and TB5-3 enables the output of the ACX allowing normal operation from the front panel or remote interface. An open connection between TB5-1 and TB5-3, disables the output of the ACX. The ACX is supplied with a jumper installed in TB5 such that the output is enabled. That jumper may be replaced by a switch or relay which can operate as a safety interlock or remote disconnect.

2.2.4 CHASSIS SLIDE MOUNTS

The ACX Power Source is designed to accept slide rails for mounting in a 19" Instrument Cabinet. These rack slides can be provided as a cost option. Contact your local sales representative or the Pacific Power Source Sales Office.

2.3 ENVIRONMENTAL SPECIFICATIONS

2.3.1 TEMPERATURE RANGE

The ACX Power Source is rated for full operation in ambient temperatures of:
0 - 40°C, relative humidity in the range of 0 - 95%, non-condensing.

Operation from 40°C to 55°C is permitted with output power decreasing linearly with increasing ambient temperature. Available power at 55°C is 600W.

2.3.2 COOLING

The ACX Power Source utilizes thermally regulated forced-air cooling to maintain proper temperatures throughout. The maximum airflow is 240 CFM.

2.3.3 ALTITUDE

The ACX Power Source is rated for full operation at altitudes of:
0 – 10,000 feet/3,000m.

2.3.4 POLLUTION DEGREE

The ACX Power Source is rated for full operation in environments of mild pollution severity and humidity referred to as Pollution Degree 2. These conditions are typically present in office, laboratory and ATE environments. Normally only nonconductive pollution occurs. Temporary conductivity caused by condensation is to be expected.

2.3.5 THERMAL PROTECTION

Temperature sensors are installed in the power assemblies. If safe operating temperature is exceeded, the output is opened and the Shutdown LED on the front panel, is lighted. A shutdown fault must be reset to restore normal operation. See paragraph 4.5 for details.

SECTION 3

INSTALLATION

3 INSTALLATION

This section describes the installation of the ACX AC Power Source.

3.1 CHASSIS PLACEMENT

The ACX Power Source is designed to operate as a bench-top unit, or to fit into a standard 19-inch rack. Provisions for mounting slide rails are included on the chassis.

		WARNING ATTENTION
THE ACX WEIGHS 40 lbs [18.2 kg] USE EXTREME CARE WHEN MOVING THE UNIT IN ORDER TO REDUCE CHANCE OF PHYSICAL INJURY. WHEN MOUNTING SLIDE RAILS TO THE ACX CHASSIS, MAXIMUM SCREW LENGTH IS 8 mm.		
LA ACX PESE 40 lbs [18.2Kg] VEILLEZ A PRENDRE TOUTES LES PRECAUTIONS NECESSAIRES DURANT LE TRANSPORT DE L'EQUIPEMENT AFIN DE MINIMISER TOUT RISQUE D'ACCIDENT PHYSIQUE. LA LONGUEUR MAXIMUM DES VIS DESTINEES A FIXER LES GLISSIERES SUR LE CHASSIS DE LA ACX EST DE 8MM.		

-----PACKING NOTICE-----

It is the customer's responsibility to insure that units are adequately packaged when they are moved to a different location. The ACX should always be packaged in the original shipping container when moved or returned to the factory for service.

3.1 CHASSIS PLACEMENT (continued)

Once the unit has been removed from its shipping container, select an appropriate location for the unit. Key points to consider when locating the chassis are:

1. PROXIMITY TO THE LOAD - The power source should be located as close to the load as possible. This helps to reduce distribution losses. These losses increase as the output frequency increases.
2. VENTILATION - The chassis requires good ventilation to adequately cool the internal components. Airflow should allow 240 CFM. The air intake is located on both sides near the front. A minimum clearance of two inches on each side and 12 inches to the rear is required for proper operation.

When the unit is placed in a 19 inch rack, it must be supported by either chassis slides or full depth angle brackets. The front panel alone will not support the weight of the chassis. Chassis slides are available from Pacific Power Source as a cost option. Call factory service for details.

After the location for the chassis is selected, verify that the input voltage of the power source is correct. Input voltage is stated on the system ID label.

After the input voltage form has been verified as correct, slide the chassis into the rack or set it into its final position. Make input and output connections as stated in paragraphs 3.3 and 3.4, respectively.

If either the Remote Interface (GPIB or RS-232) or External Sense feature is to be used, refer to paragraphs 3.5 and 3.7 for connection

Before activating the ACX output, check that the output voltage is correct to prevent possible damage to any attached equipment.

3.2 OUTPUT RANGE CONFIGURATION

The ACX is a dual-range power source. The output voltage range is selected by the FORM setting selected in the UPC controller. See the *UPC Series Operation Manual* for setup. The standard output configurations are:

FORM 1: 0 – 150 Vac

FORM 2: 0 – 300 Vac

AMPS TO VOLTS RATIO:

For accurate current meter display, the Amps to Volts Ratio Setting of the UPC is always set to 5 for the Model ACX. Refer to the *UPC Series Operation Manual* for details.

3.3 INPUT POWER CONNECTION

The ACX Power Source has been designed to accept most standard single-phase input voltage forms. This is accomplished by incorporating an active wide-range power factor correction circuit. Any single-phase input voltage from 115 to 240 Vac $\pm 10\%$ can be applied. No range selection is required.



WARNING ATTENTION

LETHAL VOLTAGE IS PRESENT AT INPUT TERMINALS OF THIS DEVICE.

ALWAYS CONNECT "PE or GND" TERMINAL TO EARTH POTENTIAL.
FAILURE TO DO SO WILL CREATE A SHOCK HAZARD.

TENSION A CARACTERE MORTEL PRESENTE SUR LES BORNES DE SORTIE DE CET EQUIPEMENT.

LA MISE A LA TERRE DES BORNES 'PE ou GND' EST IMPERATIVE. UN MANQUEMENT
A CETTE REGLE PEUT ENTRAINDER UN RISQUE DE CHOC.



CAUTION PRECAUTION

CONNECTION OF THIS UNIT TO IMPROPER INPUT VOLTAGE
WILL CAUSE CATASTROPHIC DAMAGE TO THE POWER SOURCE.
READ THE INPUT VOLTAGE LABEL AND CONNECT TO THAT INPUT VOLTAGE ONLY.
IF THERE ARE ANY QUESTIONS, CONTACT THE FACTORY

LE RACCORDEMENT A UNE TENSION D'ENTRÉE INCORRECTE PEUT CONDUIRE A DES DOMMAGES
CATASTROPHIQUES DE L'EQUIPEMENT. LIRE L'ETIQUETTE INDIQUANT LA TENSION D'ENTRÉE ET
RACCORDER L'EQUIPEMENT A CETTE TENSION D'ENTRÉE UNIQUEMENT.
POUR TOUTES QUESTIONS, CONTACTER L'USINE

3.3 INPUT POWER CONNECTION (continued)

The ACX Power Source is provided with a terminal block for input power connection. This allows hard-wired connection for system applications or attachment of an appropriate input power cord. Refer to Paragraph 2.1.1 for minimum input service requirements for various input voltages and size the input cable wires accordingly.

Refer to the table below for the proper wire color of each connection.

	Wire Color(USA)	Wire Color(Europe)
LINE (HI)	Black	Brown
NEUTRAL (LO)	White	Blue
GROUND (PE *)	Green	Green-Yellow

* Protective Earth

NOTE: It is the user's responsibility to meet all local and national electrical codes when installing this equipment. This equipment is classified as a permanently connected device. As such, proper installation requires the use of a circuit breaker in the building wiring installation which is sized appropriately to protect the facility wiring. A switch or circuit breaker shall be in close proximity to the equipment and marked as the disconnecting device for the equipment.

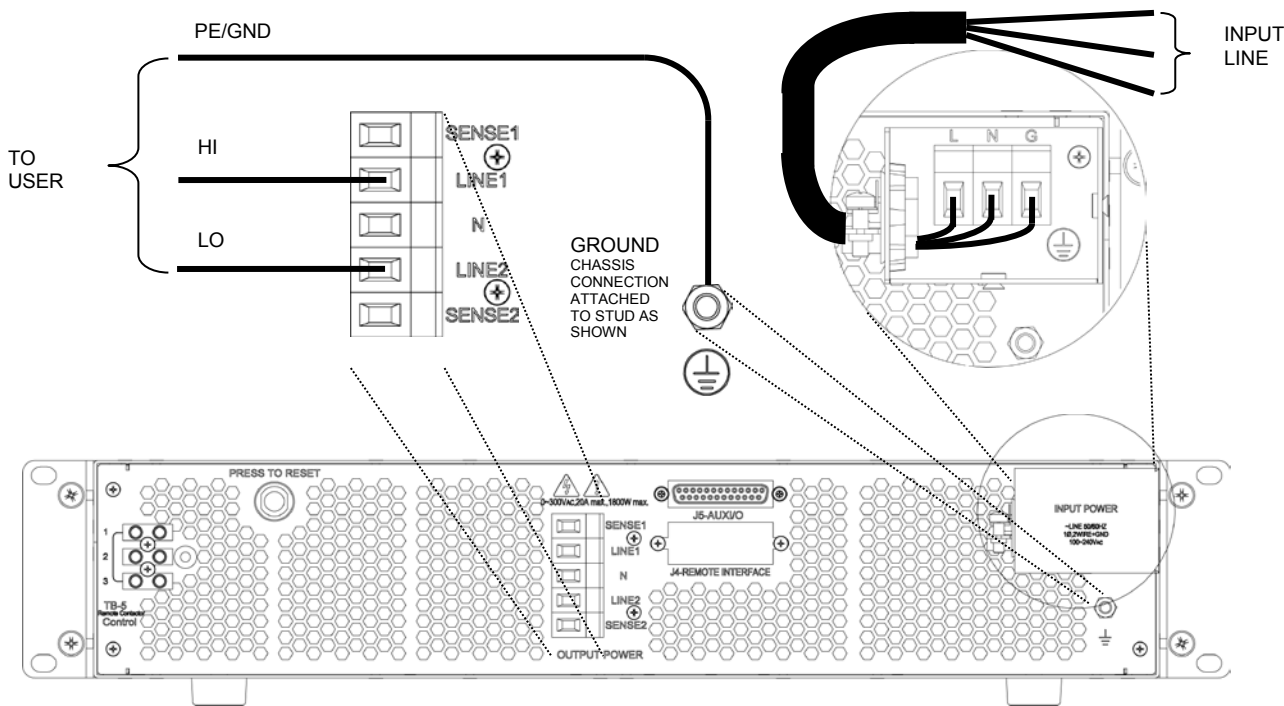
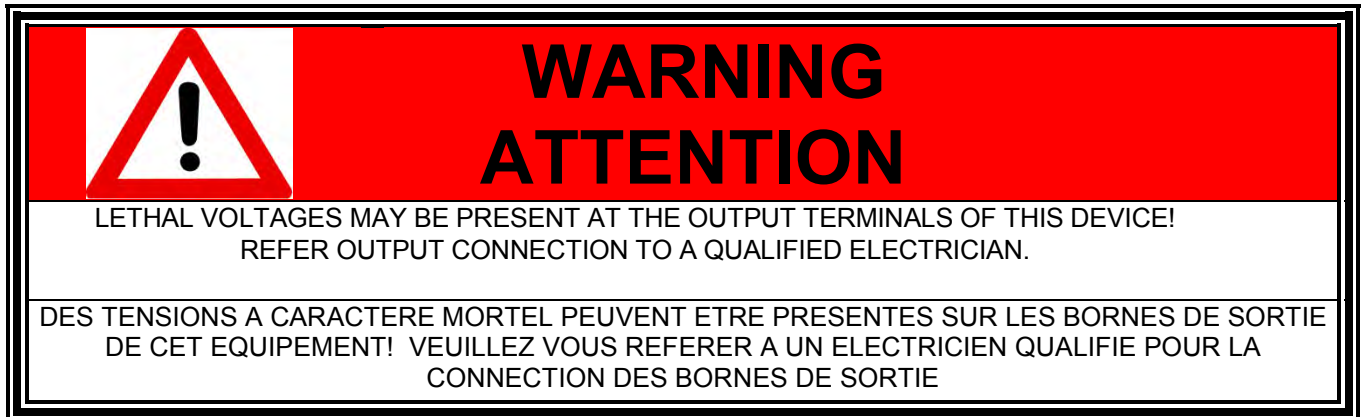


FIGURE 3.3 INPUT AND OUTPUT CONNECTIONS

3.4 OUTPUT POWER CONNECTION

The ACX provides output connections at both the front and rear of the chassis. Front panel load connection is through a universal outlet socket. Available current at this socket is 10 amps max., protected by a circuit breaker located at the rear of the unit. Rear panel load connection is available through a terminal block which is rated for the full output current of the ACX. Figure 3.3 illustrates connection of a single-phase load to the ACX rear-panel terminal. Refer to Paragraph 2.1.2 for minimum output service requirements for various output voltages and size the output wires accordingly.



NOTE: No metal parts should be touching the output terminals as dangerous voltage may be present. It is the user's responsibility to meet all local and national electrical codes when installing this equipment.

For safe operation, the PE ground terminal should always be connected to the chassis of the load.

Output power should also be referenced to the chassis, unless otherwise demanded. The output is isolated but insulation specifications require that no more than 150 Vac be present between the output neutral (LINE2 or N) and chassis. For single-phase applications, a jumper should be attached between LINE2 and PE/GND. For applications using the high range as a split-phase configuration, the jumper should be attached between N and PE/GND.

Refer to Paragraph 3.7 for connection of the External Sense connection, when used.

The ACX Power Source output can be configured for single and split phase voltage forms. Figure 3.4 is a simplified block diagram of the possible output architectures.

The FORM1 (low range, 0-150 Vac) mode of operation is a one vector output form, single-phase only. The power amplifiers are connected in parallel to form one output vector. The load can be attached from LINE1 to LINE2 or LINE1 to N. In this form, LINE2 and Neutral are connected. This output form is capable of 0-150 VAC_{L-N}.

The FORM2 (high range, 0-300 Vac) mode of operation is a two vector output form where the vectors are separated by 180° and equal in amplitude. This output form uses power amplifiers in pairs, one for each vector.

For single phase 0-300 VAC_{L-L}, connect the load from LINE1 to LINE2.

For loads that require three connections (L₁-N-L₂), commonly referred to as "Split-Phase" power, LINE 1 and LINE 2 are equal in voltage and 180 degrees apart, referenced to Neutral. Loads can be connected from either LINE to Neutral or from LINE1 to LINE2.

3.4 **OUTPUT POWER CONNECTION (continued)**

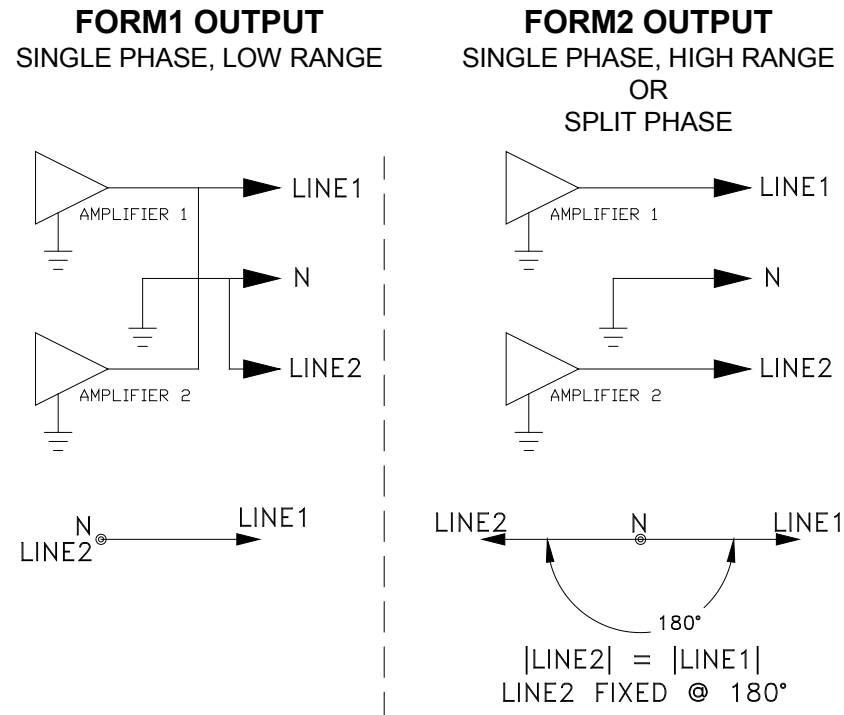


FIGURE 3.4 ACX-SERIES SYSTEM ARCHITECTURE

3.5 **REMOTE INTERFACE**

The ACX with the UPC Series programmable controller is supplied with one of two remote interfaces.

Interface Type	Notes
GPIB	General Purpose Interface Bus. Standard GPIB Connector located on the rear panel.
RS232	RS-232 Interface. D-Sub 9 Pin connector located on rear panel. <i>(Depicted in Figure 3.6)</i> Pin out DB9 Connector: Pin 1: Receive Data Pin 2: Transmit Data Pin 5: Signal Ground All other pins are N/C Older units may have been equipped with a DB25 RS232 Connector instead of a DB9. In that case, use Cable PPS #778018 (Belkin F2L088-06 cable) to adapt to a DB9 PC Serial port or USB to RS232 converter.

Connection and communication information relative to these interfaces can also be found in the *UPC Series Operation Manual*.

3.6 AUX I/O INSTALLATION

On the rear panel J5, the AUX I/O (Auxiliary Input/Output) connector, contains synchronizing outputs (digital), external oscillator inputs (analog), and amplitude modulation inputs (AM, analog). These are extremely useful in certain test applications. The use of any of these signals is optional and connection to these points is required only when these features are used.

All signals contained within the AUX I/O connector are low-level (less than ± 15 VDC) and are referenced to chassis (earth) ground reference. Refer to the UPC controller operation manual for complete definition of the signals present on the AUX I/O connector.

The AUX I/O connector is a DB-25S connector. A DB-25P connector is required for connection to AUX I/O connector.

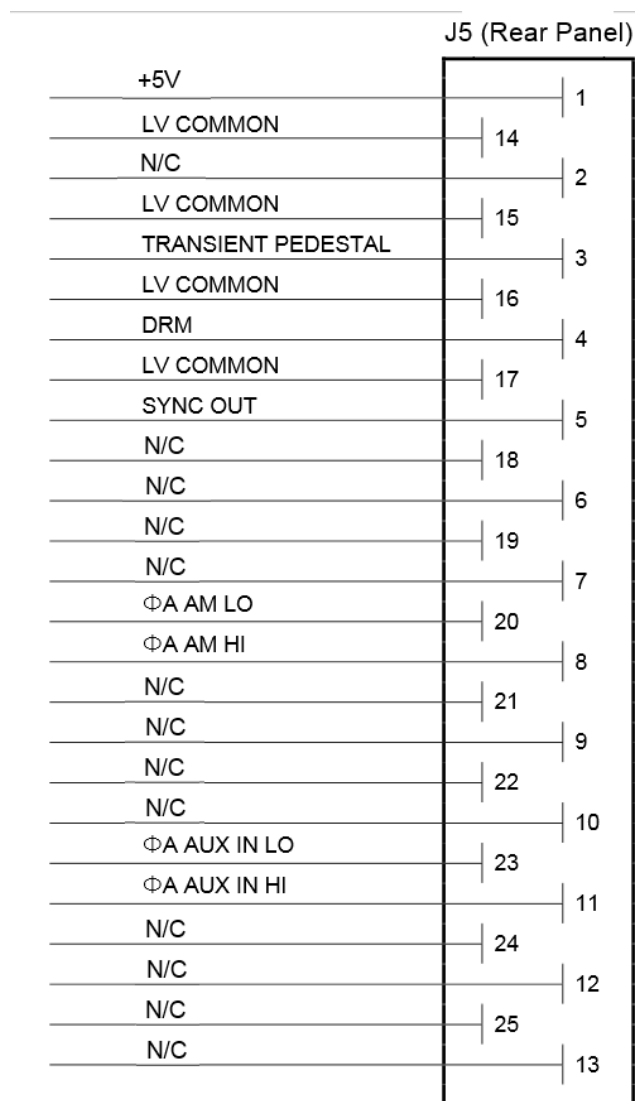


FIGURE 3.5 AUX I/O DB25S Pin Out Diagram

3.7 EXTERNAL SENSE CONNECTION

The ACX Power Source includes connections for external sense of the output voltage. This allows measurement of the output voltage at an external sense point. This feature can be completely disabled, so the wiring detailed in this paragraph is optional.

WARNING ATTENTION

LETHAL VOLTAGES ARE PRESENT AT THE OUTPUT TERMINALS OF THIS DEVICE!
WHEN EXTERNAL SENSE IS CONNECTED, THE SAME VOLTAGE APPEARS ON THE SENSE TERMINALS.
REFER OUTPUT CONNECTION TO A QUALIFIED ELECTRICIAN.

DES TENSIONS A CARACTERE MORTEL SONT PRESENTES SUR LES BORNES DE SORTIE DE CET EQUIPEMENT! SI LES SENSE EXTERNES SONT RACCORDEES, LES MEMES TENSIONS SONT PRESENTES SUR LES BORNES DE SENSE. VEUILLEZ VOUS REFERER A UN ELECTRICIEN QUALIFIE POUR LA CONNECTION DES BORNES DE SORTIE

Figure 3.6 shows external sense wiring for the ACX. There is very little current flowing through the External Sense Feedback lines. Standard 22 AWG, 600 Volt control wire is recommended for this application. Twisting the External Sense wiring is recommended and, in some cases, can improve performance. In noisy environments, shielding may become necessary to minimize interference. If shielded cable is used, be sure to ground the shield at one end only to prevent the possibility of creating a ground loop.

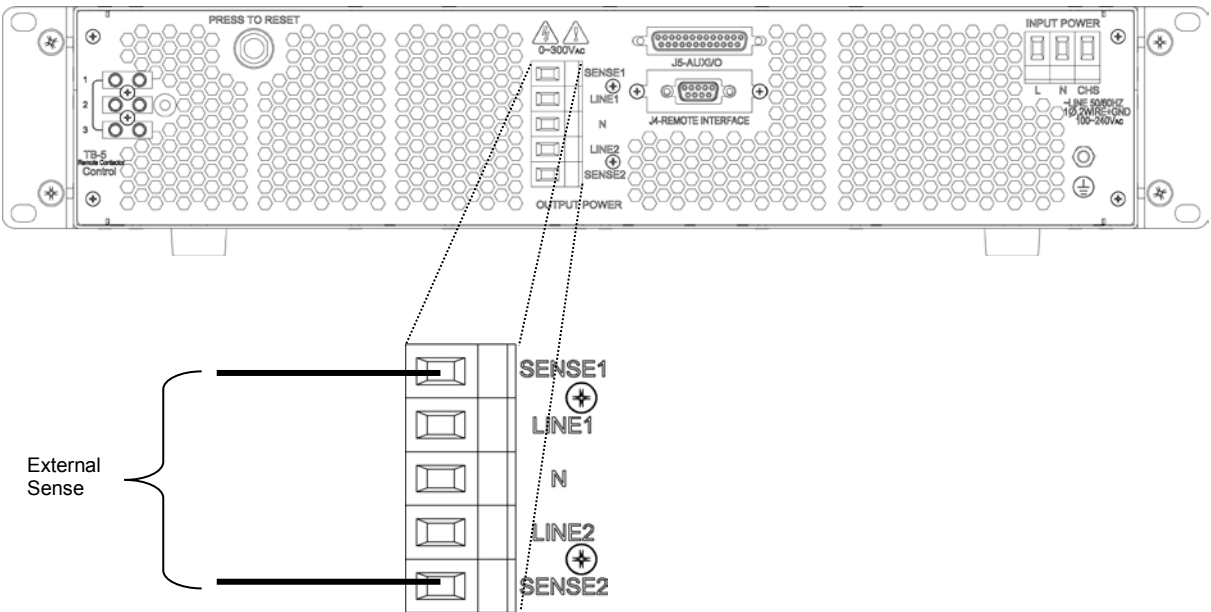


FIGURE 3.6 EXTERNAL SENSE WIRING

SECTION 4

OPERATION

4 OPERATION

This section describes the operation of a ACX AC Power Source. The procedure described in the following paragraphs is a general procedure and does not detail operation of any specific control functions. Refer to the *UPC Series Operation Manual* for detailed information regarding the features of the controller.

4.1 FRONT PANEL CONTROLS

The location of the front panel controls and indicators of the ACX Power Source is shown below. A brief description of each is also given. Figure 4.1 is a front view of the ACX. Refer to the *UPC Series Operation Manual* for information relative to the installed UPC-1 controller.

1. INPUT POWER SWITCH (Circuit Breaker @ 30A)

Circuit Breaker used as the main input ON/OFF control and protects the power source from drawing excessive input current from the input AC line.

2. OUTPUT POWER SWITCH and INDICATORS

Switch used to control the output relay of the ACX-Series Power Source. An indicator shows the status of the output. The power source will shut down for over-temperature or other internal fault. Shutdown is reset when the Output Power Switch is set to OFF and the fault has cleared. Refer to Paragraph 4.5 for details.



FIGURE 4.1 FRONT PANEL CONTROLS

4.2 INITIAL POWER-UP

This paragraph describes the procedure used to power-on the ACX Power Source for the first time. The steps below are the recommended order of operation.

	WARNING ATTENTION
LETHAL VOLTAGES ARE PRESENT AT THE INPUT AND OUTPUT TERMINALS OF THIS EQUIPMENT!	
DES TENSIONS A CARACTERE MORTEL SONT PRESENTES SUR LES BORNES D'ENTRÉE ET DE SORTIE DE CET EQUIPEMENT!	

1. For new installations, check input connections (including proper input voltage). Do not connect the load at this time. Also verify that the OUTPUT POWER switch is in the OFF position.
2. Switch the INPUT POWER switch to the ON position. The controller display will light up and begin to present output data.
3. Set the controller for the desired output voltage, frequency, etc.
(Refer to the UPC Operation Manual for adjustment of output parameters.)
4. Set the OUTPUT POWER switch of the ACX to the ON/AUTO position and press the UPC OUTPUT ENABLE switch to set it to the ON position.

	CAUTION PRECAUTION
DO NOT CONNECT ANY LOADS TO THE OUTPUT OF THE POWER SOURCE UNTIL THE OUTPUT VOLTAGE AND FREQUENCY HAVE BEEN VERIFIED AS CORRECT.	
APPLICATION OF IMPROPER VOLTAGE OR FREQUENCY CAN DAMAGE LOADS.	
NE RACCORDER AUCUNE CHARGE SUR LA SORTIE DE L'EQUIPEMENT SANS AVOIR AU PREALABLE VERIFIE ET VALIDE LES PARAMETRES DE SORTIE TENSION ET FREQUENCE	
L'APPLICATION DE TENSION ET FREQUENCE INCORRECTES PEUT ENDOMMAGER LES CHARGES CONNECTEES A L'EQUIPEMENT	

5. Verify proper voltage, frequency and waveform at the output terminal block. If the output is not correct, set the output to proper values. Refer to the controller manual for details.
6. When the desired output has been verified, turn the system OFF by first setting the OUTPUT POWER SWITCH to the OFF position and then opening the INPUT POWER SWITCH. Connect the load.
7. Re-start the unit beginning at step 2, above. Verify that the system delivers power to the load.

4.3 ROUTINE POWER-UP

After it has been verified that the installation is correct, follow the steps below for routine operation.

	WARNING ATTENTION
LETHAL VOLTAGES ARE PRESENT AT THE INPUT AND OUTPUT TERMINALS OF THIS EQUIPMENT!	
DES TENSIONS A CARACTERE MORTEL SONT PRESENTES SUR LES BORNES D'ENTRÉE ET DE SORTIE DE CET EQUIPEMENT!	

1. Set the OUTPUT POWER switch to the OFF position.
2. Switch the INPUT POWER switch to the ON position. The controller will light up and begin to display output data.

	CAUTION PRECAUTION
DO NOT CONNECT ANY LOADS TO THE OUTPUT OF THE POWER SOURCE UNTIL THE OUTPUT VOLTAGE AND FREQUENCY HAVE BEEN VERIFIED AS CORRECT.	
APPLICATION OF IMPROPER VOLTAGE OR FREQUENCY CAN DAMAGE LOADS.	
NE RACCORDER AUCUNE CHARGE SUR LA SORTIE DE L'EQUIPEMENT SANS AVOIR AU PREALABLE VERIFIE ET VALIDE LES PARAMETRES DE SORTIE TENSION ET FREQUENCE	
L'APPLICATION DE TENSION ET FREQUENCE INCORRECTES PEUT ENDOMMAGER LES CHARGES CONNECTEES A L'EQUIPEMENT	

3. Set the OUTPUT POWER switch to the ON/AUTO position and press the UPC OUTPUT ENABLE switch to set it to the ON position.

4.4 SYSTEM TURN-OFF

The ACX Power Source is turned off by:

1. Set the OUTPUT POWER Switch to the OFF position.
2. Open the INPUT POWER circuit breaker.

4.5 SYSTEM SHUTDOWN

This paragraph describes the conditions which will cause an automatic system shutdown and the procedure used to reset the ACX-Series Power Source.

4.5.1 SHUTDOWN CONDITIONS

The Output Contactor of the ACX-Series Power Source will be opened automatically when:

1. Excessive temperature is detected. Either the input power circuit or one of the power amplifiers has become too hot. Over-temperature is usually caused by either an overload on the system output or restricted air-flow (air inlets may be blocked, dirty fan filters, or a clogged or non-functioning fan).
2. The Output FORM (UPC controller) has been changed. While the Output Contactor is engaged, any change of FORM, low range to high range or high range to low range, will force the unit to open the output contactor so that the range can be changed safely.

When the Output Contactor has been opened due to one of the above faults, the red SHUTDOWN LED on the front panel of the power source will be lighted. The output contactor will remain open while the SHUTDOWN LED is lighted. This LED will remain lighted until the unit is reset.

If the Output Power Switch is in the ON/AUTO position when the unit is turned on, the SHUTDOWN LED will light. This is normal operation. The LED is turned off simply by placing the Output Power Switch into the OFF position.

4.5.2 RESETTING SHUTDOWN FAULTS

A shutdown fault is reset as follows:

1. Set the OUTPUT POWER Switch to the OFF position.
If the unit is controlled through the remote (GPIB or RS-232) port, command the output OFF (:OUTP OFF).
2. Wait for the SHUTDOWN LED to extinguish. This LED will remain lighted until the condition which caused the shutdown to occur has been corrected. In the case of shutdown due to over-temperature this may take some time while the unit cools. The output contactor cannot be engaged until the shutdown fault has been cleared.
3. After the SHUTDOWN LED has been extinguished, the unit will function normally.

NOTE: The SHUTDOWN LED is latched ON when a fault occurs. The OUTPUT POWER Switch or the Output Enable of the UPC MUST be placed in the OFF position before the SHUTDOWN LED will extinguish, even if the original fault no longer exists.

4.6 OUTPUT VOLTAGE FORMS

The ACX is a dual-range power source. The output voltage range is selected by the FORM setting selected in the UPC controller. See the *UPC Series Operation Manual* for setup. The standard output configurations are:

FORM 1: 0 – 150 Vac

FORM 2: 0 – 300 Vac

A recommended strategy for selecting the optimum output voltage form is to select the minimum voltage range necessary to drive the load. That will provide the maximum available current and allows the power source to operate more efficiently. This results in less heat being created within the unit.

4.7 AUDIBLE ALERT

An audible alert within the ACX will sound to indicate any of several conditions:

- 1) When power is applied, it will “beep” 2X indicating normal start-up.
- 2) If the AutoStart option has been ordered, the unit will “beep” several times indicating normal start-up and activation of the unit output. Power may be present at the output terminals immediately, depending on the active program settings. See the Modification insert if applicable to your unit for more information.
- 3) During operation a steady tone may be produced, indicating one of the following operational limits has been exceeded:
 - Input AC voltage is too high or too low; not within the 90-264 Vac specification.
 - Input current has exceeded 25 Arms. This could occur at low input voltage and high power output combination.
 - Output power demand exceeds the specified 120% overload condition.

4.8 CONSTANT CURRENT MODE

The default mode of operation for the ACX is **constant current** mode. In this mode, the output voltage will be reduced once the set current limit is reached to maintain the current level drawn by the load. Once the load current demand drops below the set current limit level, the programmed output voltage is restored automatically. Thus, the AC Source continues to operate even if the UUT demands more current than the set current limit value. This current limit function is an average responding RMS current limit with a 50 msec response time.

The current limit value can be set in the PROGRAM screen by entering the EDIT mode and using the ENTER key to scroll to the Ilim field value located at the bottom of this screen.



```

PROGRAM: #1   FROM=1   COUPLING=DIRECT
FREQ=60.00   U=120.0
              WF=1
#SEGS=0      Ilim=10.25
  
```

PROGRAM SCREEN Ilim SETTING

NOTE: If the Ilim = value is set higher than the maximum available current for the range, the amplifier hardware limit will come in first so the Constant Current Mode does not engage.

CC Mode	Specifications
Range:	0.1 – 50 Amps
Resolution:	0.05% of full scale
Accuracy:	±3% of full scale over the full range of ambient conditions

4.9 CONSTANT VOLTAGE MODE (CURRENT PROTECTION MODE)

When the CURRENT PROTECTION feature is enabled, the ACX will operate in a constant voltage mode. In this mode, if the load current exceeds the set current protection limit (I_{prA}) for a specified period of time, the power source will generate a fault condition and open the output relay of the power source. This disconnects the load from the AC Source. An error message will be displayed on the screen when this event occurs.

The programmable delay may be used to allow ride-through of temporary inrush current events and prevent nuisance tripping in this mode of operation. The protection delay (I_{prT}) can be set by the user in 100 msec steps from 100msec (1) to 109.22 mins (65535)

When the System Output is disabled due to Current Protect, the UPC will display

“ERROR – CURRENT PROTECTION TRIGGERED”

Either the CLEAR or DISPLAY button must be depressed to clear the fault before the OUTPUT ENABLE switch will operate.

To avoid conflicts with the constant current mode of operation, the protection mode has to be enabled by the user. It can be toggled ON or OFF from the CURRENT PROTECT MENU which is reached by pressing function key f_n followed by:

Press 3 for GENERAL SETUP
Press 7 for MORE OPTIONS...
Press 3 for CURRENT PROTECT
(Sequence: $f_n \rightarrow 3 \rightarrow 7 \rightarrow 3$)



```

CURRENT PROTECT SETUP:
PROTECT=ON
(Press +/- key to Toggle Selection)
(Press ENTER or EXECUTE to Exit)
  
```

CURRENT PROTECTION MODE SETUP SCREEN

To set the protection level and time delay for the constant voltage mode, the I_{lim} field in the PROGRAM screens can be toggled to the I_{prA} and I_{prT} fields by using the +/- toggle key. Once selected, use the ENTER key to proceed to the value field and use keypad to set Current Level and Delay in 100msec segments. Press EXECUTE to set the new values for the selected PROGRAM number.



```

PROGRAM: #1  FROM=1  COUPLING=DIRECT
FREQ=60.00   V=120.0
              WF=1
#SEGS=0      IprA=15.5
  
```

+/- to toggle field

PROGRAM SCREEN I_{prA} CURRENT LEVEL SETTING

```

PROGRAM: #1   FROM=1   COUPLING=DIRECT
FREQ=60.00    V=120.0
                WF=1
#SEGS=0       IPrT=1

```

PROGRAM SCREEN IPrT TRIP DELAY SETTING

CV Mode (CURRENT PROTECTION)	Specifications
Level	
Range:	0.1 – 50 Amps
Resolution:	0.05% of full scale
Accuracy:	± 0.2% of full scale + Calibration Reference
Delay	
Range:	1 – 65535 (0.1 sec – 109.22 mins)
Resolution:	100 msecs (1 count = 100 msecs)
Accuracy:	± 100 msecs

Notes:

1. During system operation, the UPC must be metering system output for Current Protect to operate. Current Protect (as with voltage and current metering) is disabled during program edit or UPC Setup mode for firmware revisions 5.2.2 or lower.
2. When the System Output is disabled due to Current Protect, the UPC will display, "ERROR – CURRENT PROTECTION TRIGGERED". Either the CLEAR or DISPLAY button must be depressed to clear the fault before the UPC32 OUTPUT ENABLE switch will operate.
3. It is recommended the Current Limit (Ilim) be set to a value greater than Current Protect (IprA). Setting current limit at or below current protect value will prevent Current Protect from disabling the power source output.
4. During "Transient Operation" UPC Metering timing is modified. Subsequently, Current Protection operation may be affected.

4.10 POWER PROTECTION MODE

All ACX models with firmware revision 2.53 or higher are furnished with an over power protection mode. If for whatever reason the ACX source is delivering considerably more true power than its maximum rating, the unit will shut down to protect itself from damage. Trip levels are typically set at 130% of rating and a two second delay is imposed to avoid nuisance tripping during temporary overloads or power inrush conditions.

If the total output power drawn by the load exceeds the power trip level in Watts, the output is turned off and the following error message will be displayed:



```
ERROR - POWER PROTECTION TRIGGERED
P= 2550W
OUTPUT NOW DISABLED
```

The power protection trip level differs for each ACX model as shown in the table below.

MODEL	OPP TRIP LEVEL
110ACX	1300 Watt
115ACX	1950 Watt
118ACX	2340 Watt

Upon a triggering an over power fault, the ACX can be cleared by pressing the CLEAR button and the output can be re-enabled using the OUTPUT ENABLE button.

SECTION 5

MAINTENANCE

5 MAINTENANCE

This section describes the maintenance of the ACX Power Source.

5.1 MAINTENANCE INTERVAL

Maintenance is required once every six months and consists of performing regular calibration. Refer to Section 6 for details. For critical applications or if system operation is suspect or operating conditions are extreme the calibration interval may be shortened.

It is recommended to check/clean the air intake and exhaust areas and the fans when calibrating, or more often as required by operating conditions.

SECTION 6

CALIBRATION

6 CALIBRATION

This section describes the calibration requirements of the ACX AC Power Source.

6.1 CALIBRATION INTERVAL

The ACX Power Source requires calibration once every six months or after service has been performed to the system.

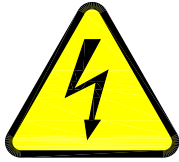
6.2 TEST EQUIPMENT REQUIREMENTS

The test equipment listed below is required for calibration of the ACX-Series Power Source.

1. Digital Voltmeter: 4½ Digit True-RMS responding
5000 Hz bandwidth, minimum
2. Frequency counter: 5 digit counter, minimum
3. Digital Ammeter: 3½ Digit True-RMS responding
5000 Hz bandwidth, minimum
(Alternate: Current transformer used in conjunction with the DVM.)
4. Oscilloscope: (Optional but recommended)
5. Load (Resistive): 15 Amps at 150 VAC, 7.5 amps at 300 VAC

6.3 CALIBRATION PROCEDURE

This calibration procedure verifies that system gains for output and metering are set properly and that the system performance, relative to output power capability is intact. Gains in various signal paths within the controller are adjusted by the procedure of Paragraph 6.3.1. Output power capability of the power source is tested by the procedure of Paragraph 6.3.2.

6.3 CALIBRATION PROCEDURE (cont.)

WARNING ATTENTION

THIS EQUIPMENT CONTAINS HIGH ENERGY, LOW IMPEDANCE CIRCUITS!! LETHAL POTENTIALS ARE CONTAINED WITHIN THE CABINET.

CARE MUST BE EXERCISED WHEN SERVICING THIS EQUIPMENT IN ORDER TO PREVENT SERIOUS OPERATOR INJURY OR EQUIPMENT DAMAGE.

VOLTAGE AT THE TERMINALS RESPONDS INSTANTLY WHEN THE OUTPUT IS ACTIVATED.

OBSERVE THE FOLLOWING WHEN SERVICE, MAINTENANCE, OR CALIBRATION ARE REQUIRED:

1. REMOVE ALL JEWELRY FROM HANDS, ARMS AND NECK WHEN SERVICING THIS EQUIPMENT. THIS PREVENTS THE POSSIBILITY OF SHORTING THROUGH THE JEWELRY AND CAUSING BURNS OR ELECTROCUTION OF THE OPERATOR.
2. WEAR SAFETY GLASSES WHEN SERVICING THIS EQUIPMENT TO PREVENT EYE INJURY DUE TO FLYING PARTICLES CAUSED BY ACCIDENTAL SHORT CIRCUIT CONDITIONS.
3. DO NOT REMOVE ANY PANEL OR COVER WITHOUT FIRST REMOVING THE INPUT SERVICE BY OPENING ALL CIRCUIT BREAKERS.
4. SERVICE OTHER THAN EXTERNAL CLEANING SHOULD BE REFERRED TO PERSONNEL AUTHORIZED BY THE FACTORY TO SERVICE THIS EQUIPMENT.

CET EQUIPEMENT CONTIENT DES CIRCUITS ELECTRIQUES DE FORTE ENERGIE ET A FAIBLE IMPEDANCE!! DES POTENTIELS A CARACTERE MORTEL SONT CONTENUS A L'INTERIEUR DE L'EQUIPEMENT.

UNE ATTENTION PARTICULIERE EST IMPERATIVE DANS LE CADRE DU SERVICE DE CET EQUIPEMENT AFIN DE PREVENIR TOUT RISQUE POUVANT ENTRAINDER UN ACCIDENT DE L'OPERATEUR OU UN DOMMAGE DE L'EQUIPEMENT.

LA TENSION AUX BORNES DE SORTIE DE L'EQUIPEMENT EST PRESENTE INSTANTANEMENT LORSQUE LA SORTIE EST ACTIVEE.

LES REGLES DE SECURITE SUIVANTES DOIVENT ETRE SUIVIES DANS LE CADRE DU SERVICE, DE LA MAINTENANCE OU DE LA CALIBRATION DE L'EQUIPEMENT:

1. OTER TOUS LES BIJOUX DES MAINS, BRAS ET COU PENDANT LE SERVICE DE L'EQUIPEMENT AFIN DE PREVENIR TOUT RISQUE DE COURT-CIRCUIT PAR L'INTERMEDIAIRE DES BIJOUX QUI POURRAIT CONDUIRE A DES BRULURES OU ELECTROCUTION DE L'OPERATEUR
2. PORTER DES LUNETTES A VERRE DE SECURITE PENDANT LE SERVICE DE L'EQUIPEMENT AFIN DE PREVENIR TOUT RISQUE D'ACCIDENT OCULAIRE POUVANT PROVENIR DE PARTICULES VOLANTES CREEES DANS DES CONDITIONS DE COURT-CIRCUIT ACCIDENTELLES.
3. NE JAMAIS OTER OU RETIRER DES PANNEAUX OU COUVERCLES DE PROTECTION SANS AVOIR AU PREALABLE COUPER LE CIRCUIT D'ALIMENTATION DE L'EQUIPEMENT.
4. TOUT AUTRE SERVICE QUE LE NETTOYAGE EXTERNE DE L'EQUIPEMENT NECESSITE L'INTERVENTION DE PERSONNEL QUALIFIE ET AUTORISE PAR L'USINE POUR CETTE MAINTENANCE

6.3.1 CONTROLLER CALIBRATION

The first step in system calibration is to calibrate the UPC controller as stated in the controller manual. Refer to Section 8 of the *UPC Series Operation Manual*, P/N 141020.

6.3.2 POWER SOURCE LOAD TEST

These tests are used to verify that the power source is able to deliver full rated output power. Additionally, the output metering function of the controller is also checked.

1. Set the Power Source for FORM2 Output, CSC Enabled.
2. Attach a 6A, 2000W load to the rear panel Output Terminal.
3. Set the output for 300 V and close the Output Contactor.
4. Verify that the output voltage remains constant (within load regulation limits) and that the Output metering reads correct values.
5. Open the Output Contactor.
6. Configure for FORM1 Output. Repeat above procedure with a 12A, 2000W load and 150 V.
7. Verify that the output voltage and Power Source meters read properly.

SECTION 7

SERVICE

7 SERVICE

This section describes service of the ACX AC Power Source.

7.1 SERVICE PROCEDURE

The ACX Power Source contains no user serviceable parts. Service is properly accomplished by returning the unit to the factory or authorized service center. Under some circumstances, the factory may authorize the user to perform limited sub-assembly or component changes as deemed allowable by the factory service representative. For this purpose, many sub-assembly and component level Pacific Power Source part numbers have been included here. Part numbers for various components are listed separately for each Model.

When questions regarding operation arise or service is required, call the factory for instructions. Pacific Power Source Corporation maintains a staff of highly trained technicians who are ready to assist. The phone number to call is (714)898-2691.

7.2 SYSTEM LEVEL FACTORY PART NUMBERS

MODEL NAME		PART No.
MODEL 110ACX	1.0 kVA AC Power Source	200405
MODEL 115ACX	1.5 kVA AC Power Source	
MODEL 118ACX	1.8 kVA AC Power Source	

7.3 SUB-ASSEMBLY AND CHASSIS COMPONENT PART NUMBERS

The factory part numbers given in the following list are provided to aid the user in obtaining spare or repair sub-assemblies and components where the factory has given permission, in advance, for the user to perform field repairs on the Power Source.

SUB-ASSEMBLY	FACTORY PART No.
UPC1 Programmable 1 ϕ Controller:	141170
LCD Display Assembly:	139071
Power Amplifier Assembly:	200431
Input PFC Assembly:	200418
Keyboard Assembly:	200437
Input Filter Assembly:	200434
COMPONENT	FACTORY PART No.
Input Circuit Breaker:	716098
Front Panel Handle:	200526
Output Terminal Block:	705113
Input Terminal Block:	705113
Fan:	703200
Fuse:	712088

SECTION 8

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SECTION 9

MODIFICATIONS AND CHANGE NOTICES

9 MODIFICATIONS AND CHANGE NOTICES

In cases where customer specified modifications have been installed in the equipment, the modifications will be described on the following pages. If present, be sure to notice any special instructions relative to operation and calibration of the system.

Product change notices or manual errata will be provided in hard copy format. If you printed out this manual, please place these additional pages in this section.