Owner's Manual

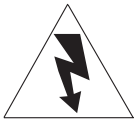
FURMAN
PURIFY YOUR POWER

the
ACD-100

Features

- 100 amp total load
- Five 20 amp, 120 volt circuits
- High inrush magnetic circuit breakers
- Status indicators for each circuit
- 4 buss design accommodates 120V or 240V single phase, or 208V three phase power
- Oversized buss bars Varistor spike and surge protection
- Compact two rack space package
- Most economical product of its type

SAFETY WARNING



The instructions provided here are insufficient for completing a working ACD 100 installation. While the subject of attaching a supply cable to the ACD 100 is covered, the connection of the far end (pigtail end) of that cable to a power source is not. Because of the many configurations that 100 amp or larger electrical services can take and the numerous connector types that may be used, it is not possible to adequately describe every situation that may be encountered. **Therefore, it is strongly recommended that the selection of the ACD 100 supply cable, and the connections to both ends of it, be done by a licensed electrician who is familiar with the available electrical service.**

GENERAL INFORMATION

Congratulations on your purchase of a Furman ACD 100 AC Power Distro. The ACD 100 is a compact rack mount power distribution system that is ideal for touring PA systems, touring musical and theatrical acts, mobile recording facilities, on location film and video shoots, etc. any situation where AC power must be distributed to multiple circuits and a hard wired, built in system is missing, inadequate, or impractical. Use of a Power Distro is cost effective, both in terms of the convenience it offers and the elimination of bulky and expensive parallel feeds and related connectors.

The ACD 100 can handle up to 100 amps of incoming power, distributing it to five 20 amp, 120V circuits. Each circuit has a neon status indicator that lights up when its breaker is turned on, and a 20 amp duplex outlet on the rear panel.

The circuit breakers used in the ACD 100 are high inrush magnetic types designed specifically for critical data processing and broadcast applications where nuisance tripping cannot be allowed. They have a pulse tolerance* of 10 times the rated current, or 200 amperes. This makes them particularly suited for use with power amps and other devices with high reactance loads, since the high pulse tolerance will keep them from tripping falsely at the instant power is applied or on musical peaks. If a breaker should trip, it can be reset as soon as the overload is correctedthere is no cool down delay time required. Temperature compensations which aff ‘ ect fuses and inexpensive thermal breakers are not a concern. The breakers are of the highest industrial grade, UUCSA listed, precise in operation and rugged in construction. They may be used as on off switches for the five circuits.

The ACD 100 provides basic spike and surge suppression, with metal oxide varistors (MOV’s) connected between the hot and neutral conductors of each circuit. The MOV’s respond to line derived spikes in less than a nanosecond, clamping transient voltages to safe levels of 250V or less.

** Pulse tolerance is defined as the maximum peak current amplitude of a single half sine wave pulse of 8 ms. duration that will not trip the circuit breaker*

WIRING INSTRUCTIONS

Prior to use, the ACD 100 must be fitted with a proper supply cable, which must then be connected to a 100 amp power source and disconnect. The following instructions will guide you through the selection and connection process. All steps should be done while the unit is disconnected from power and is not mounted in a rack. Begin by removing the six screws that hold the top cover in place and put the screws and cover aside.

1. Determine the power source: In North America, there are generally three possibilities: 120V single phase, 240V single phase, or 208V three phase. The first alternative requires only three* conductors, but they will need to be heavy to avoid voltage drop in the cable, making the cable stiffer and less flexible. The second voltage configuration is 240V, available in most residential and some commercial sites and requiring a four* conductor cable. The third alternative, 3 phase, will require five* conductors which can be lighter gauge, but 3 phase power may not be available in every building.

2. Select a cable and determine its length: If the ACD 100 is installed in a permanent or semi permanent location, it is possible to connect it with flexible metal jacketed conduit. However, rubber jacketed (type S) or neoprene jacketed (type SO) cable will usually be preferable in portable use because of its flexibility and ease of coiling for storage. Another possibility is to use individual wires (such as welding cable) bundled together every foot or two with plastic ties. The gauge and number of conductors depends on the supply voltage and cable or wire bundle length. Consult Table 1 below to select the cable type best suited for your application:

	# Of Conductors Including Ground	Current Carrying Conductors	Ground Conductors
120V	3	4 AWG	8 AWG
240V **	4	6 AWG	10 AWG
208V 3-ph ***	5	8 AWG	12 AWG

TABLE 1, REQUIRED WIRE GAUGES

The “Current Carrying Conductor” and “Ground Conductor” columns give the minimum recommended AWG size for cable lengths of 100 feet or less. Note that while it is acceptable for the ground conductor to be a smaller gauge than the current carrying conductors, many cables have all conductors the same size. If they are all the same size, it must be the size specified in the table for the current carrying conductors.

** Including ground, assuming the system neutral must be kept separated from the safety (chassis) ground.*

*** Assumes three 20 amp loads on one conductor and two 20 amp loads on the other conductor.*

**** Assumes two 20 amp loads on each of the first two conductors and one 20 amp load on the third conductor.*

The ACD 1 00's strain relief clamp can accommodate a cable up to 1.5 inches in diameter. For reference, a 4 conductor, 2 AWG type S or SO portable cord's diameter is 1.28 inches.

If the cable is to be moved from location to location frequently, we suggest you make it at least a few yards longer than the length needed for the most distant location. This is because the'vow source end will typically be left as "pigtails" that is, with the outer jacket stripped off a few feet and no connectors attached. When the electrician makes the connection to the power source, he or she will often cut a few inches off each conductor to expose clean copper to assure a reliable connection. In this way, the cable will become slightly shorter with each use.

3. Prepare and connect the cable: The supply cable will be connected to the ACD 100's buss bars via terminals that secure the individual conductors with set screws. These can accept wires as large as 2 AWG. Strip one end of the cable as shown in the Strip Length drawing. When removing the outer jacket, be careful not to nick or cut into the insulation of the individual conductors. When stripping the individual conductors, be careful not, to cut through any of the copper strands.

The individual conductors should be color coded as follows: Green, chassis ground; White, neutral (labeled NEU on the bussbar block); and Black, hot no. 1 (labeled X). If a four or five conductor cable is used, the remaining two conductors are Red, hot no. 2 (labeled Y) and Blue (sometimes Orange), hot no. 3 (labeled Z).

After threading the cable end through the strain relief clamp, connect the stripped conductors to the buss bar block. Be sure to put each wire in the lower part of its terminal, so that it is compressed above and below by copper rather than by the set screw itself. Tighten the set screws securely.

4. Divide the load: If there is more than one hot wire, the five 20 amp loads must be split among them and balanced as well as possible. This is done by reconnecting the wires from the buss bars to the five circuits. There are two wires to each circuit, a hot (black) and a neutral (white). Only the black wires may be moved. All white wires must connect to the NEU (neutral) buss bar. Each black wire is labeled with a letter (A, B, C, D, or E) corresponding to the circuit it goes to. The connections are made by Fast On terminals on the buss bars. To reconnect a

	Input Cable Color	Buss Bar	Circuits
120V	Black	X	A,B,C,D,E
240V	Black	X	A,B,C
	Red	Y	D,E
208V 3-ph	Black	X	A,B
	Red	Y	C,D
	Blue or Orange	Z	E

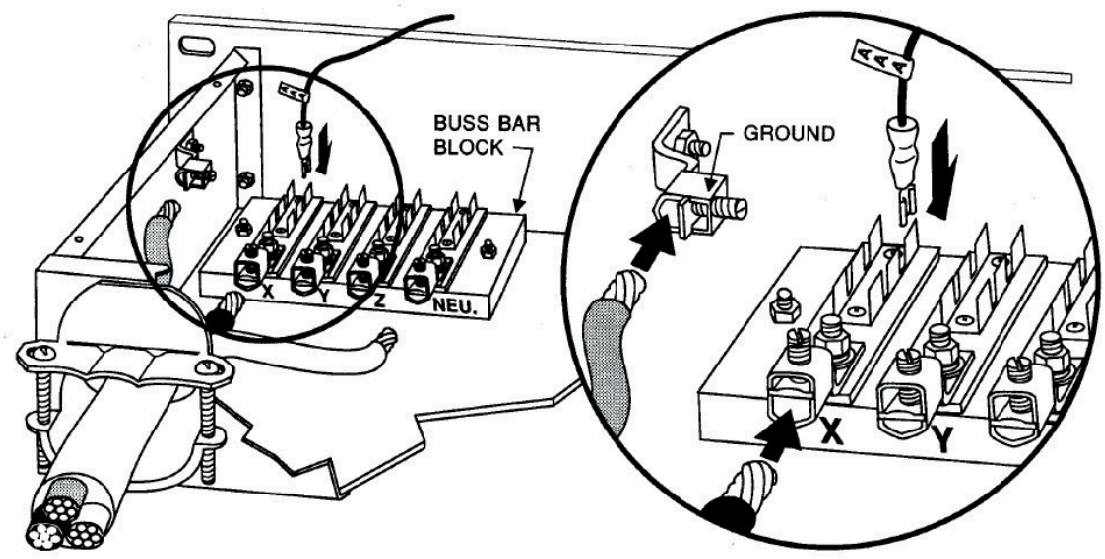
TABLE 2, DIVIDING THE LOAD

wire, grasp it by the terminal and pull straight up. Then reposition it over an unused Fast On male terminal on the appropriate buss bar and push down firmly. Wire the loads in accordance with Table 2.

5. Tighten clamp and close unit: Tighten the cable strain relief clamp firmly. If you are using a cable, make sure about a half inch of the outer jacket extends beyond the clamp into the unit. If you are using a wire bundle, it is a good idea to wrap the bundle with several layers of heat shrink tubing or other sturdy material at the point where the clamp tightens, to minimize the likelihood that the clamp will cut into the insulation of the individual wires. Replace the top cover.

This completes the internal wiring of the ACD 100.

6. Terminate source end of cable or wire bundle: As mentioned in Rem 2 above, the most common cable termination is to break the ends out as pigtails and leave its hookup to the house electrician in each venue. In some circumstances, a suitable connector may be provided at the power source and the cable can be terminated with a mating connector. Often these will be Cam Lok ® or similar connectors for each individual conductor.



If you want to provide a way to disconnect the cable from the ACD 100 for separate storage or shipment, one good way is to permanently attach a very short cable to the ACD 100 and terminate it with Cam Lok connectors. A long cable with mating CamLoks would then be prepared which could easily be disconnected and stored.

ACCESSORIES

If you wish to monitor your ACD 100's output voltage, we recommend you use a Furman PM PRO II or PL PRO II Power Conditioner on one or more circuits. These rack mount products are perfect complements to a power distribution system. Each offers bar graph line voltage meters to monitor the incoming line, and the PM PRO II has an AC ammeter as well. Each has nine outlets protected with comprehensive spike and surge suppression and RFI filtering. If rack illumination is needed, the PL PRO II has twin slide out, swiveling lights with a dimmer control.

Furman also makes a 20 amp Power Sequencer, the PS PRO II, which can turn various units on in a predetermined sequence, reversing the sequence on power down. The PS PRO II also provides comprehensive power conditioning capability.

LIMITED WARRANTY

Furman Sound, Inc., having its principal place of business at 1997 South McDowell Blvd., Petaluma, CA 94954 ("Manufacturer") warrants its ACD-100 (the "Product") as follows:

Manufacturer warrants to the original Purchaser of the Product that the Product sold hereunder will be free from defects in material and workmanship for a period of three years from the date of purchase. The Purchaser of the product is allowed fifteen days from the date of purchase to complete warranty registration by mail or on-line at the Furman website. If the Product does not conform to this Limited Warranty during the warranty period (as herein above specified), Purchaser shall notify Manufacturer in writing of the claimed defects. If the defects are of such type and nature as to be covered by this warranty, Manufacturer shall authorize Purchaser to return the Product to the Furman factory or to an authorized Furman repair location. Warranty claims should be accompanied by a copy of the original purchase invoice showing the purchase date; this is not necessary if the Warranty Registration was completed either via the mailed in warranty card or on-line website registration. Shipping charges to the Furman factory or to an authorized repair location must be prepaid by the Purchaser of the product. Manufacturer shall, at its own expense, furnish a replacement Product or, at Manufacturer's option, repair the defective Product. Return shipping charges back to Purchaser will be paid by Manufacturer.

THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Manufacturer does not warrant against damages or defects arising out of improper or abnormal use of handling of the Product; against defects or damages arising from improper installation, against defects in products or components not manufactured by Manufacturer, or against damages resulting from such non-Manufacturer made products or components. This warranty shall be cancelable by Manufacturer at its sole discretion if the product is modified in any way without written authorization from Furman Sound. This warranty also does not apply to Products upon which repairs have been affected or attempted by persons other than pursuant to written authorization by Manufacturer.

THIS WARRANTY IS EXCLUSIVE. The sole and exclusive obligation of Manufacturer shall be to repair or replace the defective Product in the manner and for the period provided above. Manufacturer shall not have any other obligation with respect to the Products or any part thereof, whether based on contract, tort, strict liability or otherwise. Under no circumstances, whether based on this Limited Warranty or otherwise, shall Manufacturer be liable for incidental, special, or consequential damages. Manufacturer's employees or representatives' ORAL OR OTHER WRITTEN STATEMENTS DO NOT CONSTITUTE WARRANTIES, shall not be relied upon by Purchaser, and are not a part of the contract for sale or this limited warranty. This Limited Warranty states the entire obligation of Manufacturer with respect to the Product. If any part of this Limited Warranty is determined to be void or illegal, the remainder shall remain in full force and effect.

ACD 100 SPECIFICATIONS

VOLTAGE AND CURRENT

Input Current:	100 amps
Input Voltage:	Either: 120V single phase, 240V single phase, or 208V 3 phase
Output:	Five identical 20 amp, 120V circuits

CIRCUIT BREAKERS

Pulse Tolerance:	200 amps (maximum peak current amplitude of a single half sine wave pulse of 8 ms. duration that will not trip the breaker)
Overload vs. Trip Time:	100% overload: No trip. 125% overload: 0.7 12 sec. 200% overload: 0. 1 3 sec.

SPIKE/SURGE PROTECTION

Spike Protection Mode:	Line to neutral on each circuit
Clamping Voltage:	200V peak
Response time:	1 nanosecond
Maximum surge current:	6,500 amps
Maximum spike energy:	80 joules per mode, 240 joules total

OTHER

Mechanical:

Dimensions:	3.5" H x 19" W x 8" D, rack mount.Weight: 12 lbs (5.5 kg).
Construction:	Steel chassis, zinc chromate plating; .125" brushed and black anodized aluminum front panel

Power Consumption:	None
Safety Information:	All current carrying components are TUV listed.

FURMAN

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