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Model 441A101

MODULAR AC LINE POWER SUPPLY

Installation and Operating Manual

**For assistance with the operation of this product,
contact PCB Piezotronics, Inc.**

Toll-free: 800-828-8840
24-hour SensorLine: 716-684-0001
Fax: 716-684-0987
E-mail: info@pcb.com
Web: www.pcb.com





Repair and Maintenance

PCB guarantees Total Customer Satisfaction through its "Lifetime Warranty Plus" on all Platinum Stock Products sold by PCB and through its limited warranties on all other PCB Stock, Standard and Special products. Due to the sophisticated nature of our sensors and associated instrumentation, **field servicing and repair is not recommended and, if attempted, will void the factory warranty**.

Beyond routine calibration and battery replacements where applicable, our products require no user maintenance. Clean electrical connectors, housings, and mounting surfaces with solutions and techniques that will not harm the material of construction. Observe caution when using liquids near devices that are not hermetically sealed. Such devices should only be wiped with a dampened cloth—never saturated or submerged.

In the event that equipment becomes damaged or ceases to operate, our Application Engineers are here to support your troubleshooting efforts 24 hours a day, 7 days a week. Call or email with model and serial number as well as a brief description of the problem.

Calibration

Routine calibration of sensors and associated instrumentation is necessary to maintain measurement accuracy. We recommend calibrating on an annual basis, after exposure to any extreme environmental influence, or prior to any critical test.

PCB Piezotronics is an ISO-9001 certified company whose calibration services are accredited by A2LA to ISO/IEC 17025, with full traceability to SI through N.I.S.T. In addition to our standard calibration services, we also offer specialized tests, including: sensitivity at elevated or cryogenic temperatures, phase response, extended high or low frequency response, extended range, leak testing, hydrostatic pressure testing, and others. For more information, contact your local PCB Piezotronics distributor, sales representative, or factory customer service representative.

Returning Equipment

If factory repair is required, our representatives will provide you with a Return Material Authorization (RMA) number, which we use to reference any information you have already provided and expedite the repair process. This number should be clearly marked on the outside of all returned package(s) and on any packing list(s) accompanying the shipment.

Contact Information

PCB Piezotronics, Inc.
3425 Walden Ave.
Depew, NY14043 USA
Toll-free: (800) 828-8840
24-hour SensorLine: (716) 684-0001
General inquiries: info@pcb.com
Repair inquiries: rma@pcb.com

For a complete list of distributors, global offices and sales representatives, visit our website, www.pcb.com.

Safety Considerations

This product is intended for use by qualified personnel who recognize shock hazards and are familiar with the precautions required to avoid injury. While our equipment is designed with user safety in mind, the protection provided by the equipment may be impaired if equipment is used in a manner not specified by this manual.

Discontinue use and contact our 24-Hour Sensorline if:

- Assistance is needed to safely operate equipment
- Damage is visible or suspected
- Equipment fails or malfunctions

For complete equipment ratings, refer to the enclosed specification sheet for your product.

Definition of Terms and Symbols

The following symbols may be used in this manual:



DANGER
Indicates an immediate hazardous situation, which, if not avoided, may result in death or serious injury.



CAUTION
Refers to hazards that could damage the instrument.



NOTE
Indicates tips, recommendations and important information. The notes simplify processes and contain additional information on particular operating steps.

The following symbols may be found on the equipment described in this manual:



This symbol on the unit indicates that high voltage may be present. Use standard safety precautions to avoid personal contact with this voltage.



This symbol on the unit indicates that the user should refer to the operating instructions located in the manual.



This symbol indicates safety, earth ground.

PCB工业监视和测量设备 - 中国RoHS2公布表

PCB Industrial Monitoring and Measuring Equipment - China RoHS 2 Disclosure Table

部件名称	有害物质					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
住房	O	O	O	O	O	O
PCB板	X	O	O	O	O	O
电气连接器	O	O	O	O	O	O
压电晶体	X	O	O	O	O	O
环氧	O	O	O	O	O	O
铁氟龙	O	O	O	O	O	O
电子	O	O	O	O	O	O
厚膜基板	O	O	X	O	O	O
电线	O	O	O	O	O	O
电缆	X	O	O	O	O	O
塑料	O	O	O	O	O	O
焊接	X	O	O	O	O	O
铜合金/黄铜	X	O	O	O	O	O

本表格依据 SJ/T 11364 的规定编制。

O： 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。

X： 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。

铅是欧洲RoHS指令2011/65/ EU附件三和附件四目前由于允许的豁免。

CHINA RoHS COMPLIANCE

Component Name	Hazardous Substances					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Chromium VI Compounds (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	O	O	O	O	O	O
PCB Board	X	O	O	O	O	O
Electrical Connectors	O	O	O	O	O	O
Piezoelectric Crystals	X	O	O	O	O	O
Epoxy	O	O	O	O	O	O
Teflon	O	O	O	O	O	O
Electronics	O	O	O	O	O	O
Thick Film Substrate	O	O	X	O	O	O
Wires	O	O	O	O	O	O
Cables	X	O	O	O	O	O
Plastic	O	O	O	O	O	O
Solder	X	O	O	O	O	O
Copper Alloy/Brass	X	O	O	O	O	O

This table is prepared in accordance with the provisions of SJ/T 11364.

O: Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

X: Indicates that said hazardous substance contained in at least one of the homogeneous materials for this part is above the limit requirement of GB/T 26572.
Lead is present due to allowed exemption in Annex III or Annex IV of the European RoHS Directive 2011/65/EU.

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CHASSIS: MODELS 441A33, 441A35, 441A42, 441A43, 441A45 AND 441A49 2
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Chassis: Models 441A33, 441A35, 441A42, 441A43, 441A45 and 441A49

The PCB Series 440 Modular Chassis is the enclosure into which the modules of the PCB Modular Signal Conditioning System are inserted. Its configuration varies by model, ranging from two slots to nine; one slot is reserved for the power supply, while Eurocard-style plug-in modules occupy the remaining slots and are secured to the inside frame using mechanical fasteners. A circuit board assembly in the rear of the chassis distributes power to the modules and provides the means by which modules communicate with each other, the rest of the system, and a personal computer.

Models 441A33, 441A35 and 441A38 are the computer-controlled, master versions of the standard chassis. The back panel of these master chassis have two RS-485 connectors marked IN and OUT and one RS-232 connector. Models 441A45 and 441A49 are slave chassis designed to be controlled by the masters. Slave chassis also have two RS-485 connectors, but no RS-232 connector. In a multiple chassis system, the master controller communicates to the other modules via the common RS-485 network and to the computer via the RS-232 connection.

Equipment Ratings

This equipment operates at 104°F (40°C), in an environment having 93% relative humidity. Its frequency range is 50/60 Hz. Operation of this unit is limited to environments having an altitude of less than 2 000 meters. The pollution degree for operation of the Model 440 is two (2), meaning that normally, only non-conductive pollution occurs. The over voltage category is II, indicating the transient voltage levels that may be tolerated by the equipment.

Multiple Chassis Configuration



High voltage electrostatic discharge (ESD) can damage electrical devices. To avoid triboelectric transfer:

1. Connect the cables only with the AC power off.
2. Temporarily “short” the end of the cable before attaching it to any signal input or output.

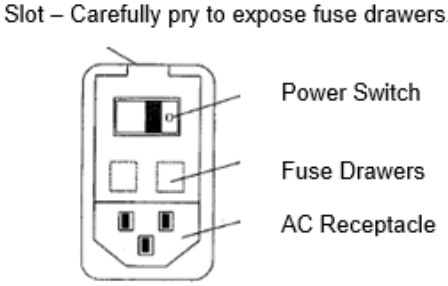
Each master controller can control up to four chassis filled with modules. Each chassis (or rack) must, however, be uniquely defined. This is accomplished by setting rack addresses. There are two jumpers on the upper right portion of the backplane labeled RAD1 and RAD0, as shown on Figure 1 in Appendix A. The settings are as follows:

	RAD1	RAD0
Rack 1	Low	Low
Rack 2	Low	High
Rack 3	High	Low
Rack 4	High	High

Refer to Figure 2 in Appendix A for a four-rack configuration. Notice on the drawing that the RS-485 IN connection on Rack 1 requires termination, as does the 485 OUT connection on Rack 4. The 485 IN is terminated with the TER1, TER2 and TER3 terminators on the backplane. The termination settings are also shown.

Changing the Fuse

Two rear panel fuses, located below switch in the AC receptacle, protect the power line inputs of the instrument. The fuse type is a T 1.6A, L 250 V. To change the fuse, disconnect the power cord. Find the slot just above the power switch and pull forward to open the door that exposes the fuse drawers. Pull the individual drawer forward and insert a new fuse.



Disabling Cooling Fan

If it is necessary to turn off the cooling fan in order to reduce acoustical noise, a jumper “J2,” located on the motherboard, must be removed. In order to access this jumper, the rear panel must be taken off. The fan may then be disabled via a command from the host computer controlling the master. The fan should be disabled for as short a period as possible to ensure continuous cooling. Contact the factory for more details.

Available Modules

For more information on individual modules, please see the individual manual accompanying each of the following:

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- Model 442A102: Single-channel, line powered ICP® sensor signal conditioner, unity gain.
- Model 442A103: Single-channel, line powered ICP® sensor signal conditioner, with gain of x1, x10, x100.
- Model 442B104: Four-channel, line powered ICP® sensor signal conditioner, with gain of x1, x10, x100. Optional 477A-type plugin filters available.
- Model 442A101: Single-channel, line powered ICP® sensor signal conditioner, with gain of x1, x10, x100, AC/DC coupled.
- Model 443B101: Dual-mode ICP/charge amplifier – vibration (2-slot).
- Model 443B102 Dual-mode ICP/charge amplifier – pressure or force (2-slot).

AC Power Supply: Model 441A101

The Model 441A01 is a single-slot, CE marked, AC-line power supply designed to fit only the extreme right slot of the PCB Series 440 Modular Chassis. It supplies a maximum of 45 watts of power and may be used to operate single or multiple signal conditioning modules housed in the two-, three-, or nine-wide standard chassis and optional auxiliary chassis. Please note that while this unit is rated for a maximum wattage of 45, CE requirements mandate that it be used only up to 30 watts.

For wattage calculations, refer to the specification sheet for the individual module. To determine power capability of your particular set-up, add all the powers for all modules. CE mandates that these totals must be ≤ 30 watts.

DC Power Supply: Model 441A102

Model 441A102 is a single width, CE marked, rechargeable DC battery power supply that can be used in place of the 441A101 AC Power. Standard accessories include:

- Model 017A22 power cord
- Model 488A08 battery charger
- Built-in 3.0 Ah NiMH rechargeable battery

The optional Model 488A09 is a 12VDC @3.4A AC Power Adaptor that allows the 441A102 to be used with any AC line power in the world. (100-240VAC 50/60Hz).

The 441A102 can be used to power up to 30 watts of PCB modular series units. For wattage calculations, refer to the specification sheet for the individual module. To determine power capability of your particular set-up, add all the powers for all modules. CE mandates that these totals must be ≤ 30 watts.

Operation

To operate, slide into the power supply slot of the PCB Series 440 Modular Chassis, tighten up the two mounting screws and turn the power switch to ON.



The 441A102 has some components that will get hot under heavy loads. Do not remove the module from the enclosures immediately after continuous heavy use. Let completely cool first.

Charging the Battery



It is not recommended to charge the 441A102 while the power switch is ON. No damage will occur, but charge time will increase.

To calculate the estimated battery life, divide 30 by the total number of watts of all the modules being used. Refer to module specification sheets for the number of watts to use in your calculation. To charge the battery:

1. Turn power off on the front panel of the 441A102.
2. Plug the Model 488A08 into the charger input jack.
3. The yellow charge light on the charger will light solid during fast charge as indicated on the charger. Typical charge time for a totally depleted battery is 1.5 to 2 hours.
4. After the battery is charged about 90%, the charge light will begin to blink (1/8 sec blink). If possible, leave charger on with charge light blinking for another few hours to get maximum charge.



Remove the charger plug by pulling on the body of the connector, not the cord. This is a locking feature to ensure a good connection while charging.

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Appendix A: Figures

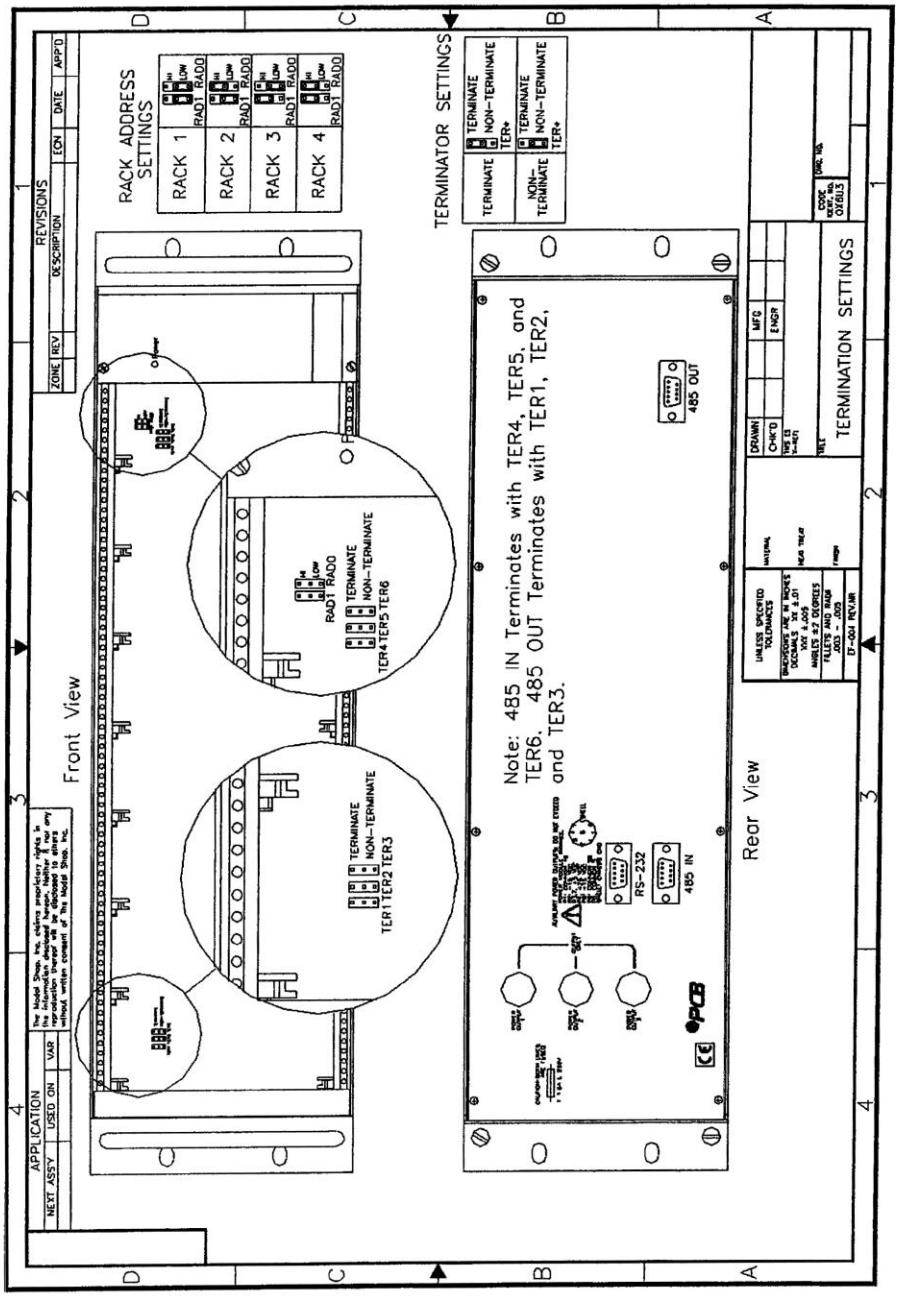


Figure 1: TERMINATION SETTINGS

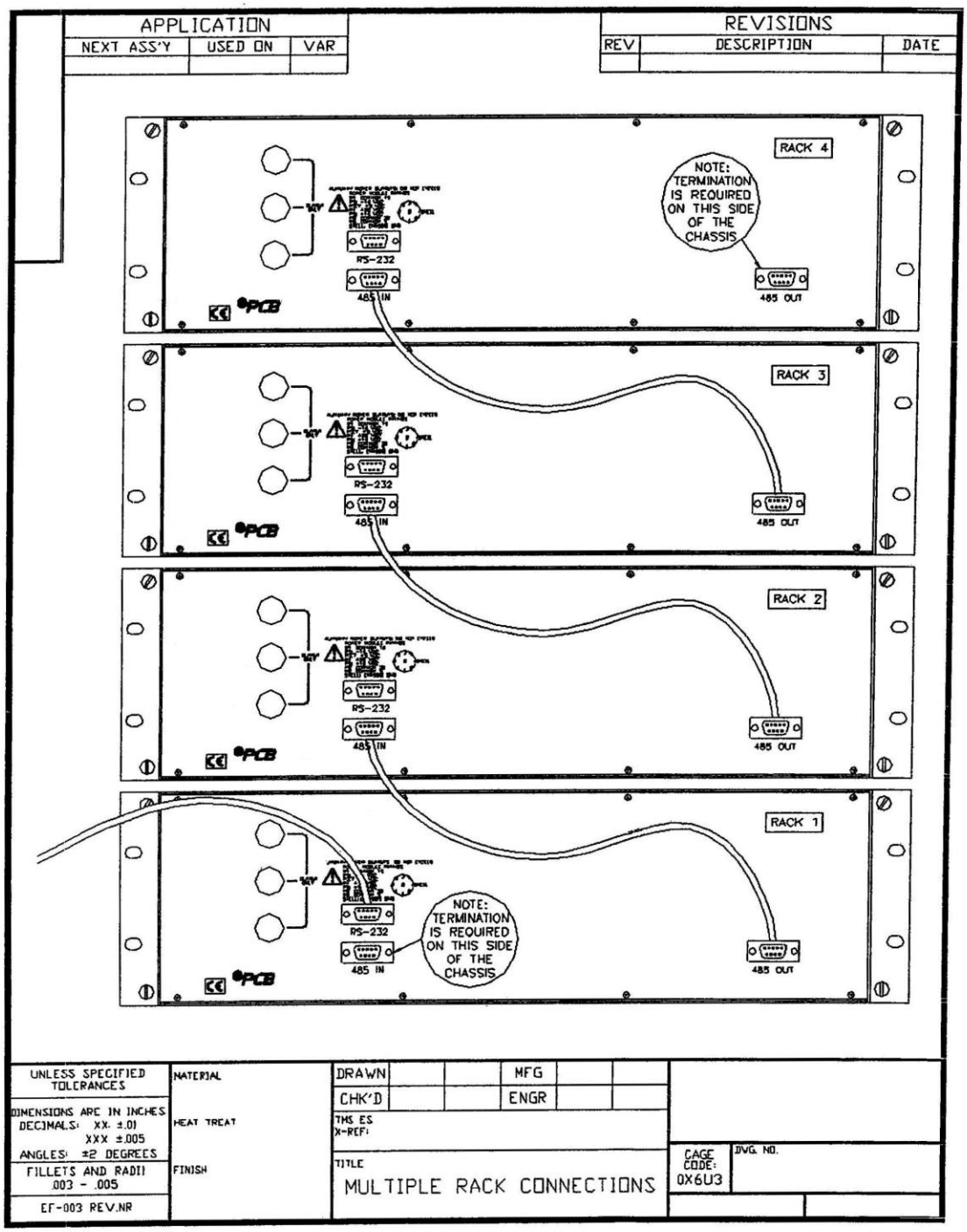


Figure 2: MULTIPLE CHASSIS CONFIGURATION

Model Number		Revision: E
441A101	**MODULAR AC LINE POWER SUPPLY**	ECN #: 23396

AC POWER SUPPLY			
Input Power:	VAC	100-240	
	Hz	50/60	
	amps	1.3	
Output Power	W	30	
Output Voltage:	VDC	+5 +0.025V, -0.00V	[2]
	VDC	+27 +3V, -.5V	[2]
	VDC	+15 ±0.45V	[2]
	VDC	-15 ±0.45V	[2]
ENVIRONMENTAL			
Operating Temperature Range	°F [°C]	32 to +120 [0 to +50]	
PHYSICAL			
Size (H x W):	in [mm]	5.05 x 1.8 [128 x 46]	[1]
Weight	lb [kg]	1.4 [0,64]	

NOTES:
[1] Single width unit.
[2] Per OEM specification.
[3] Consult Certificate of Conformance PS024.

CE [3]

All specifications are at room temperature unless otherwise specified.

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In the interest of constant product improvement, we reserve the right to change specifications without notice.

Drawn:	Engineer:	Sales:	Approved:	Spec Number:
Date: 1-6-06	Date: 1/20/06	Date: 1/20/6	Date: 1/24/06	7939

PCB PIEZOTRONICS INC. ELECTRONICS DIVISION
3425 Walden Avenue, Depew, NY 14043 716-684-0001 Fax (716) 684-0987 E-Mail: electronics@pcb.com

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