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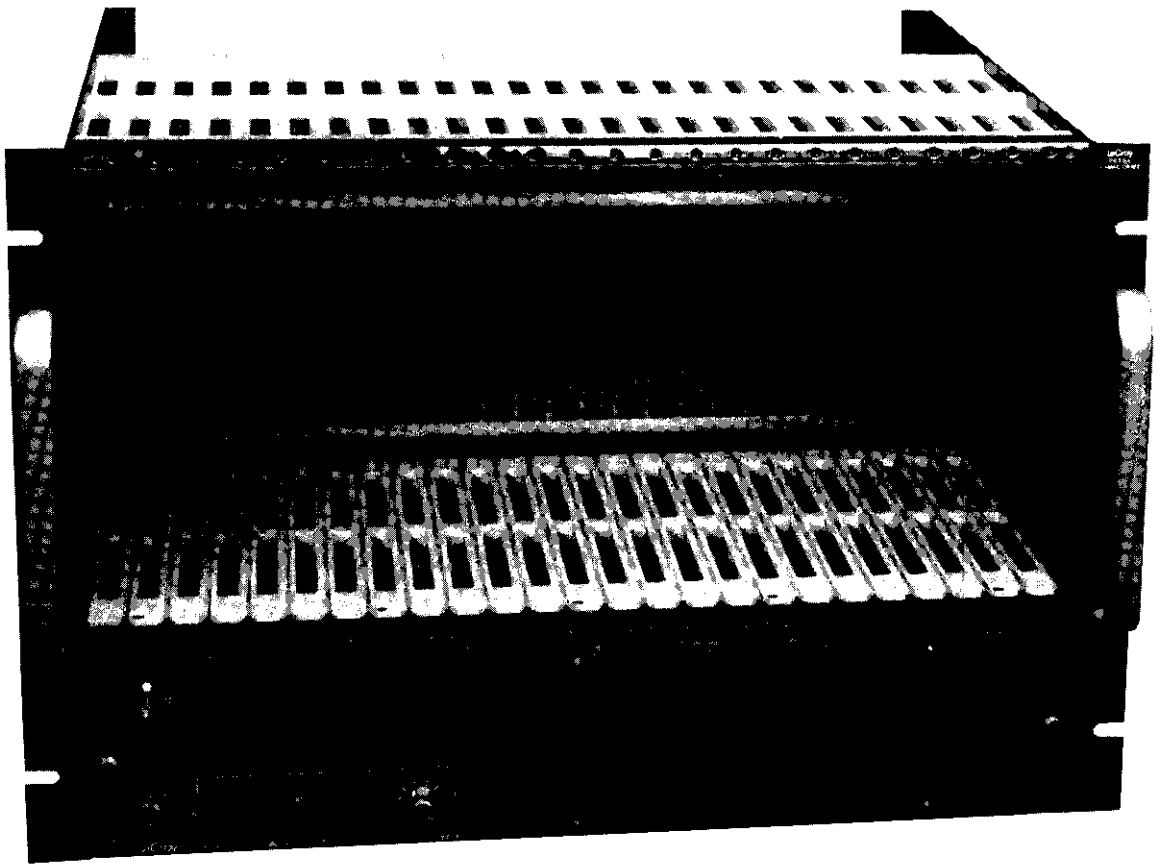
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Section 2: Model 1434A Mainframe



Product Description

The LeCroy Model 1434A rackmount Instrument Mainframe integrates up to twenty-three IEEE-583 Standard (CAMAC) instrument modules and one mainframe controller module. (LeCroy and other instrument companies manufacture many different CAMAC instrument modules.) The 1434A mainframe efficiently delivers up to 650 Watts of clean regulated power to support all LeCroy waveform digitizer, amplifier, attenuator, function generator, clock generator, counter, memory, fiber optic, and interface IEEE-583 Standard Modules.

IV. Secure the power supply to the mainframe.

1. Align the power supply with the guide pins on the mainframe as shown in Figure 2-1. Push the units together.
2. Install the four captive slotted screws to fasten the power supply to the mainframe. The captive screws can be started by hand, but should be tightened using a flat head screwdriver.
3. Re-install the fan tray to mate with the power supply. Once mated, tighten the thumbscrews.

CAUTION: *Misalignment of the the fan power connectors and the D connectors can cause damage to the contacts. Ensure proper alignment before mating.*

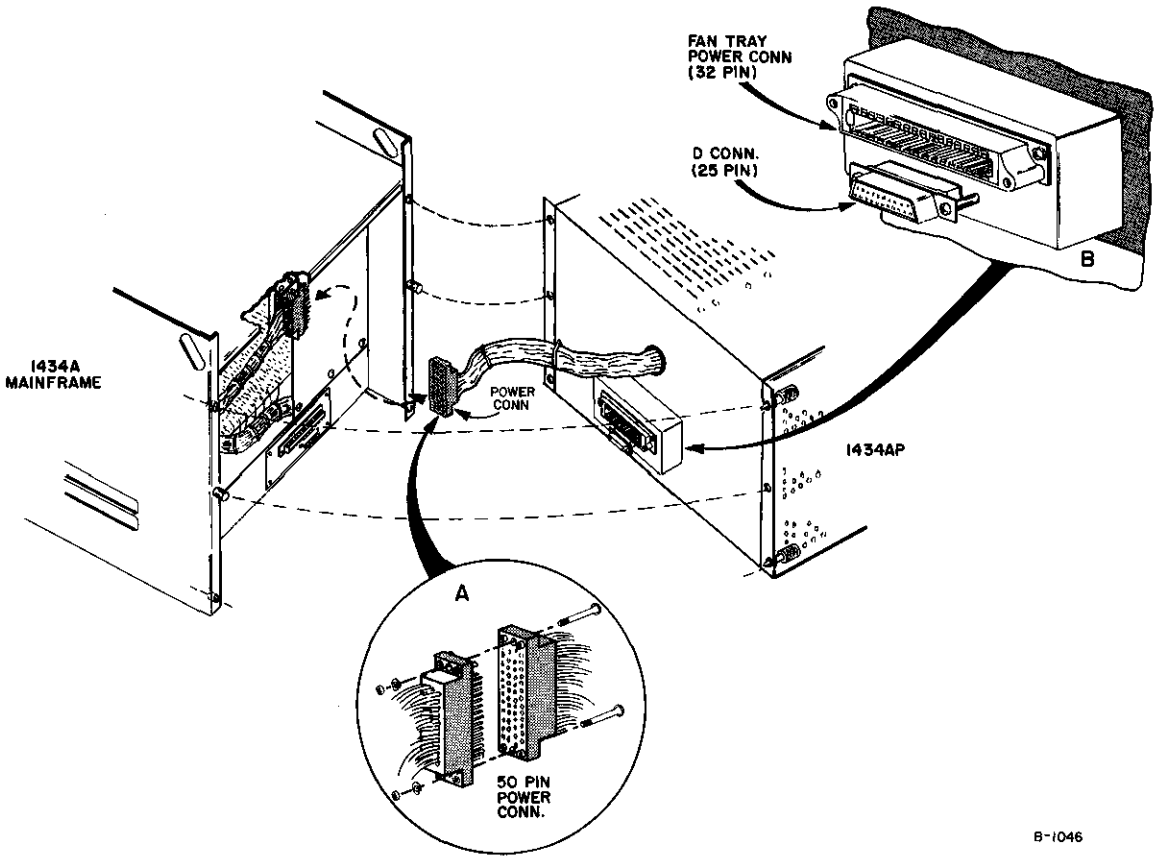


Figure 2.1: Mount 1434AP to 1434A Mainframe

Module Installation

> **WARNING:** Inserting or removing a plug-in module when the 1434A Mainframe is powered ON may damage the module. This damage is due to temporary misalignment of the contacts on the circuit board fingers.

LeCroy's Model 8901A Mainframe Controller module requires the two rightmost slots; LeCroy's Model 6010 Mainframe Controller module requires the three rightmost slots. (For details concerning optimal slot locations for LeCroy waveform digitizer modules, refer to the desired module's Operation Manual.)

With the power OFF, slide a plug-in module into the mainframe. Ensure that its instrument rails correctly align with the card cage.

Tighten (clockwise) the thumbscrew on the module's lower front panel to draw its interface connectors into the mainframe's backplane. Conversely, loosening the thumbscrew retracts the module's interface connectors from the backplane. DO NOT OVERTIGHTEN. Excessive screw driver force can damage the thumbscrew threads.

Operation

The 1434A is a Safety Class 1 instrument (instrument with an exposed metal chassis that is directly connected to earth via the detachable AC line cord connector).

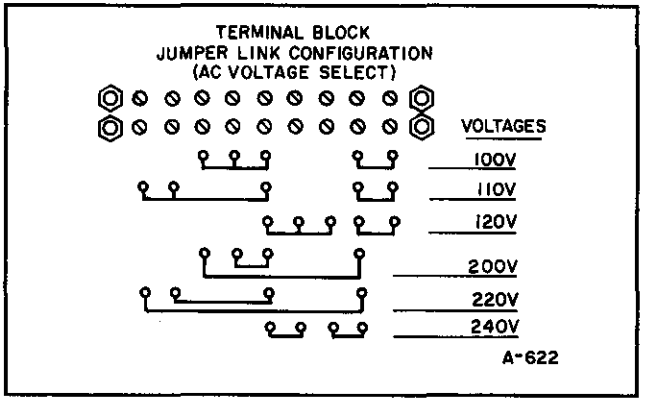
WARNING: Before energizing the 1434A, ensure that the instrument chassis is properly grounded. This precaution reduces the risk of electrical shock which can result if the protective ground is defeated. When the 1434A's 3-prong power cable is connected to an appropriate AC power receptacle, it provides a ground for the instrument chassis. DO NOT DEFEAT THE PROTECTIVE GROUND of this instrument by connecting adapters to the attachment plug or receptacle.

Selecting the AC Supply Voltage

The power supply can be set to operate from 100, 110, 120, 200, 220 or 240 V AC (all ±10%). It is shipped set to the most common supply voltage at its destination. Most supplies are factory set to operate on 110 V AC. If the supply has been set for a different operating voltage, a sticker on the front panel indicates the setting.

WARNING: Be sure AC line plug is disconnected from the AC power source before making these changes.

The operating voltage can be modified via three jumper links in the fan tray. To modify the setting, change the positions of the links according to the following table:



+/– 6 V Line Current Change

The factory set line current is 60 A at –6 V and 45 A at +6 V. To change it to 60 A at +6 V and 45 A at –6 V, refer to the following illustration:

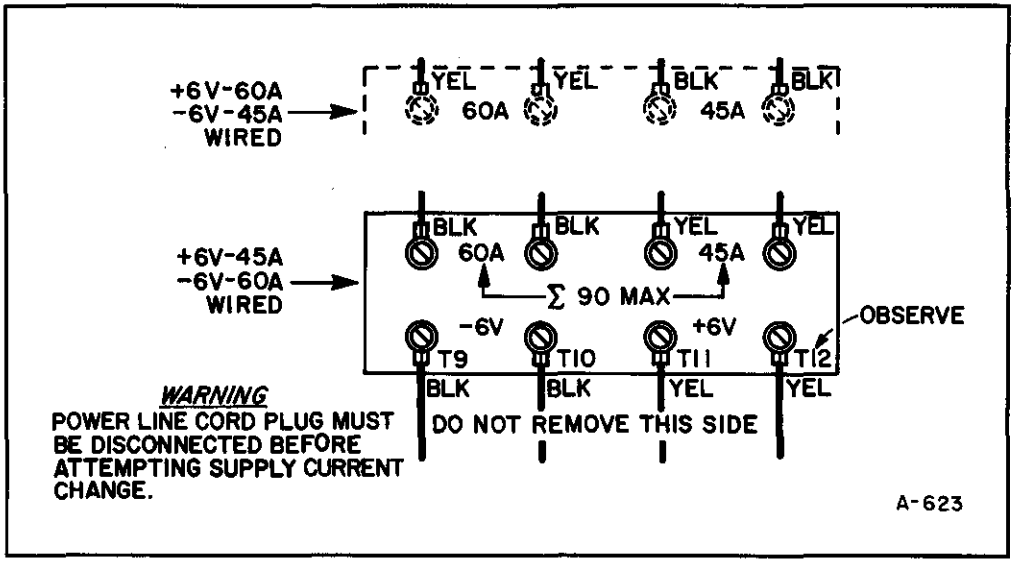


Figure 2.5: +/- 6 V Line Current Configuration

Output Monitoring

The front panel digital meter displays the output voltage or current of the supply selected using the meter switch.

WARNING: Connecting the DC power and inserting/removing modules from the mainframe should be done only when the AC Power Switch is "OFF".

Circuits for monitoring the current outputs of the ± 6, ±12 V, and ±24 V supplies are calibrated at the factory to an accuracy of ±2% of full scale. The voltage and current calibration are preset at the factory.

A connector located adjacent to the AC receptacle provides a convenient means of monitoring the four standard output voltages, i.e., ±24 V and ±6 V. Test points are also located on the front control panel.

Maintenance

Adjustments

The voltage adjustments are located on the printed circuit board inside the 1434AP power supply but are accessible through holes in the top cover of the power supply.

Fuse Replacement

To ensure the safe operation, this supply must be fitted with appropriate AC fuses.

Size	1/4" X 1 1/4"
Type	SLOW BLOW
Voltage Rating	125 V and 250 V
Current Rating	15 A for 200, 220, 240 V AC 25 A for 100, 110, 120 V AC

Recommended Types

LITTLEFUSE	326 025 (25 A)
BUSS TYPE SPT	MDA15 (15 A)

Filter

Inspection regularly. Remove the filter assembly from the front panel and run water through the foam element. Dry thoroughly before reinstalling.

Voltage Regulators +/- 6 V

The main transformer, rectifiers, and reservoir capacitor bank provides a nominal 16 V output. It is stabilized by positive and negative series pass regulators to provide the plus and minus 6 V supplies.

The positive and negative regulators are identical except for the reversed polarity of all the semiconductor devices used. Each series regulator comprises two parallel high current transistors (Q2P, Q2N). They are situated on two separate heat sinks to share the thermal load equally. Resistors (R1P, R2P, R1N, R2N) act to share the current equally between the two transistors. The resistors also provide a voltage drop that enables the load current to be measured.

The bases of the series regulator transistors are driven by a Darlington transistor (Q1P). This stage permits the output voltage to be controlled by an input of a few mA. This current comes from a current source (Q2P, on the control board 1434AP-1). The drive voltage to Q1P on the heat sink and hence the output voltages are controlled by draining a variable amount of current through Q1P on the regulator board. Since this transistor has an emitter resistor and sees a collector resistance made up of the input resistance of the output stages in parallel with R28, it acts as a voltage amplifier. Its collector voltage, and hence the output voltage, is limited by the zener diode (CR9).

Q1P on the regulator board is driven by a low drift amplifier (U2) which compares the reference voltage with a fraction of the output voltage. C11 ensures the AC stability of the supplies under normal operating conditions.

Protection against excess load current is provided by a foldback current limiter Q3P which clamps the output current to a maximum of 60 A and reduces the load current to about 30 A under short circuit conditions. Neither of the conditions should damage the power supply. To avoid damage to the equipment driven by the supply, however, an overcurrent detector, optocoupler, U6, causes the entire supply's AC power to be cut off within 20 msec of an overcurrent or short current. Transient overloads of less than a millisecond should not trigger a shutdown.

If a short-circuit failure of either of the series pass transistors occurs, the output voltage is clamped to 7.5 V by a TranZorb. This creates an overload current which triggers the shutdown circuit.

If both series pass transistors failed to open circuit, the control amplifier would shut off Q1P in an attempt to restore the output voltage. This condition is also detected and is used to shut off the supply's AC power.

Specifications

Model 1434A High Power CAMAC Mainframe

CAMAC Module Capacity	23 single-width plus one dual-width controller (25 slots total).
Dimensions	19" rackmount 12 1/4" height (plus space for exhaust air) 22 1/2" depth.
Weight	47 lb. (21.5 kg)
Voltage Meter	3 1/2 digit meter provides monitoring of all output currents and voltages. Accuracy ±1% of full scale voltage; ±2% of full scale current. Resolution better than 0.5%.
Cooling	Six high capacity fans *NOTE: The Model 1434A must be mounted such that the air circulation through the mainframe is not impeded. See page 2-6.*

Model 1434AP Power Supply Included In The Model 1434A

CONDITIONS: Line voltage 110 V, transformer wired for 110 V, ambient temperature 25 degrees C.

Power Available

Total Power	650 W maximum ±6 V, ±12 V, ±24 V combined.
± 6 V	Up to 60 A from either supply. 90 A maximum combined sum. Factory set: 45 A maximum from +6 V, 60 A maximum from –6 V. Reversible by user. See graph 1 for load conditions.
± 24 V	6 A maximum each. Subtract current drawn by ±12 V load.

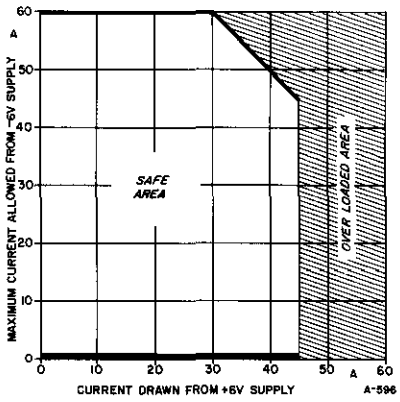
power is restored after an AC power failure related shutdown. This function can be defeated if desired. Consult the factory.

Operating Range Full 650 W output from 0 degrees C to 40 degrees C ambient temperature. Derate at –10 W/degrees C. above 40 degrees C. Maximum ambient temperature 50 degrees C. See graph 2.

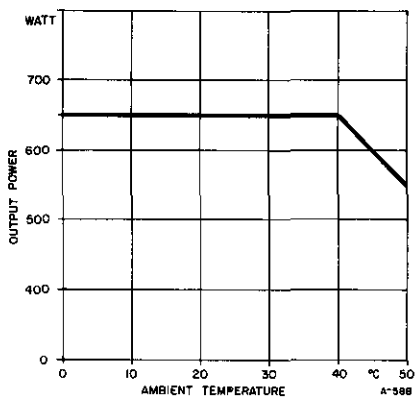
Line Voltage Field Selectable: 100/110/120/200/220/240 V AC ±10%, 47 to 65 Hz. Factory set to 110 V. 220 V operation recommended if full output power is permanently needed.

Line Current 18 A at 110 V and full output power, 9 A at 220 V.

Weight 53 lb. (24.1 kg)



GRAPH 1



GRAPH 2

Additional Specifications Of 1434A Subassemblies

The 1434A CAMAC Power system consists of the Model 1434A Mainframe, the Model 1434AF Fan Unit and the Model 1434AP Power Supply. The Model 1434A Mainframe uses the Berkeley approved Dataway, low insertion force connectors and precision cast runners for 25 module positions. Two guide pins and four captive screws are provided for mounting the 1434P Power Supply onto the crate. A 50-pin connector at the end of a 12 inch cable supplies power to the crate.

Input Current for 110 V AC (650 W output):
Average 12.6 A
RMS 17.8 A
Peak 37 A

1434A MOD 100

The 1434A MOD 100 has vents in the base of the fan tray to provide vertical air flow for use in externally cooled rack systems. Its front-panel air intake on the fan tray is blocked off.

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