Maxima-885
CAMAC Powered Crate
2/28/84

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Warranty
DSP TECHNOLOGY
MODEL MAXIMA 885
Powered CAMAC Crate

For highest power applications, such as transient digitizing and other high-density ECL modules, the MAXIMA 885 provides greater available total current on the +6V and +24V. The MAXIMA 885 is without question the most powerful CAMAC crate manufactured in the United States. The MAXIMA 885 is built to the same exacting standards as the OPTIMA 860.

POWER FEATURES
- ±6V 85 Amps shared current (to 50A maximum on either +6V or -6V)
- ±24V 12 Amps shared current (to 6A maximum on either +24V or -24V)
- ±12V to 3 Amps on either +12V or -12V (current shared with +24V)
- 600 Watts total output power
- New bottom air intake with optional air deflector and labtop mounting stand.
- New LCD front panel metering and test jacks for output voltages and currents with convenient rotary switch instead of push buttons.

GENERAL FEATURES
- Optional 6-fan blower tray with over 800 CFM rating.
- Bottom air intake maximizes the effect of the 6-fan blower (also available on 3-fan).
- Reinforced steel crate construction with cast aluminum non-galling, electroless nickel-plated module guide rails for heavy duty and long, trouble-free life.
- Modular power supply manufacturing experience has demonstrated superior reliability and performance.
- Integral support shelf and quick-release mechanism allows no-tool, single-handed power supply removal.
- Slide-out blower tray for module ventilation features low-noise, venturi-type, ball-bearing fans (3-fan standard tray with over 400 CFM rating - or optional 6-fan tray with over 800 CFM rating) combined with large air intake openings provides cooling capacity superior to all others for enhanced module performance and maximum life.
- Provides thorough protection on all circuits and outputs:
  - Overvoltage Protection
  - Overcurrent Protection
  - Thermal Protection
- Exceeds all CAMAC (IEEE 583-1982) and ESONE report, EUR 4100e, Type CP-1 power supply requirements for:
  - Regulation
  - Ripple and Noise
  - Long-Term Stability
DESCRIPTION
Model Maxima 885 Powered CAMAC Crate

The MAXIMA 885 CAMAC (IEEE Std 583, Computer Automated Measurement and Control) powered crate is an assembly made up of three basic components: the crate, the power supply, and the blower drawer.

The blower section and power supply can be removed without disturbing or removing the crate from the rack, or dismantling cabling from the modules.

The crate houses the removable blower tray, supports the power supply, and incorporates the Dataway bus. The crate assembly is constructed of reinforced steel and precision-cast aluminum upper and lower guides for long, rugged, trouble-free use. Precision-cast and machined full-depth, self-centering module-insertion guide rails insure smooth alignment of CAMAC modules with their Dataway connectors.

Over 14 years experience in CAMAC crate power supply manufacturing goes into this new enhanced model. It features the same high-quality components and modular construction of earlier models. Rigorous quality assurance procedures and standards are followed throughout, including a 48-hour burn-in, and final test under load conditions. Additional features include, "at-a-glance" fuse visibility and a separate cooling visibility and a separate cooling system. Further, the power supply's modular construction assures ease of maintenance and minimum downtime should repair become necessary. All outputs of the power supply are protected from overvoltage and overcurrent. No damage to the power supply results if there is a continuous short circuit. A thermal warning and a thermal cutoff switch protect the power supply whenever the internal temperature exceeds a safe limit.

The slide-out fan tray features three standard, or optional six, low-vibration, low-noise, venturi-type, ball-bearing fans rated at 134 CFM each. The large air intake openings, both on the front and below with high efficiency dust filters, current voltage metering with LCD display along with external test jacks and the power switch are design upgrades to this industry standard design. A series of options are available (see below) which make this crate the leading powered CAMAC crate on the market.

TECHNICAL SPECIFICATIONS

MECHANICAL:
Width: 19.0 in. (rack mount)
Height: 12.3 in.
Depth: 21.6 in. behind front panel
Weight: 89 lb. (shipping weight: 102 lb.)

ELECTRICAL:
Input: 115 V ± 10%/12% Vac, 50-60 Hz nominal (standard), 220V optional
Output Voltage and Current: ±5 V at 0A to 50A, current shared to 85A
±24 V at 0A to 6A, current shared to 12A
±12V at 0A to 3A, current shared to 24V output
Output Power: 600W at 25°C, derated to 500W at 50°C

NOTE:
OUTPUT POWER is the sum of two groups of output voltages multiplied by their respective load currents. The sum of the two groups must not exceed 600W at 50°C and must be derated to 500W at 50°C.

GROUP 1 OUTPUTS: ±6V, ±24V, and ±12V combined output power and must not exceed 400W at 25°C. The ±12V output currents are considered ±24V outputs for power calculations.

GROUP 2 OUTPUTS: -6V and -24V combined output power must not exceed 400W at 25°C and 375W at 50°C.

Overvoltage Protection: All output voltages are protected by silicon control rectifiers (SCR) that can be activated by ac line transients, large load current changes, or internal circuit failure.

Overcurrent Short Circuit Protection: The outputs of the power supply are protected against over-current and short circuits by fold-back-type current-limiting circuits which causes the output current to be reduced to a low, safe value.
TECHNICAL SPECIFICATIONS (Cont.)
Model Maxima 885 Powered CAMAC Crate

Thermal Protection: Two thermal switches are mounted on each of the two heat sinks. One
thermal switch on each heat sink disconnects the main power; one turns on the overload indicator on
the front panel of the blower.

Metering: ±6V and ±24V and current, rotary switch selectable.

Test Jacks: All output voltages

Line and Load Regulation: ±0.2% for ±6V and ±24V
outputs 2.0% for ±12V output
Ripple and Noise: 15mV peak to peak, 50MHz
bandwidth, 50mV on ±12V outputs
Transient Recovery: 50 micro-seconds, typical
Long-term Stability: Less than 0.2% for
24hr. after 1 hr. warm-up
(constant ambient temperature)

Temperature Coefficient: 0.02%/°C maximum

ENVIRONMENTAL:
Operating Temperature: 0°C to 50°C
(32°F to 122°F) at less than 90% relative humidity

Options:
1) NIM holes - Jacking screw holes for NIM
modules in both upper and lower guide grills.
2) Viking blocks - set of 12 blocks
accommodate 36-pin Viking card-edge
connectors (required with DSP’s
QUANTROL E-200 series ADC Modules).
3) NIM holes and Viking blocks
4) 230 Vac, 50 Hz
5) 100 Vac, 50 Hz
6) Six fans
7) RM-800 rack mount power supply
8) Status monitor bit: Optimal monitoring of all
outputs and thermal overloads. Provides single
relay contact closure.
9) Triangle Air Deflector and Intake Duct -
convenient labtop mounting.
Maxima-BB5
CAMAC Powered Crate
2/28/84

FEATURES:
- Positive-support, quick-disconnect power supply
- Status-bit option
- Maximum air flow with venturi-type ball-bearing fans
- Partitioned fan tray for baffling air flow properly
- At-a-glance fuse visibility
- Easily replaced high-adhesion dust filters
- Separate cooling fan for power supply
- Cost-precision-machined, non-galling guides
- Self-centering module-insertion guides
- Full-depth-grill casting
- Low-vibration, low-noise operation
- Metering for voltage and current
- Overvoltage and current limiting

GENERAL DESCRIPTION:
The Maxima-BB5 CAMAC (IEEE-583, Computer Automated Measurement and Control) powered crate is an assembly made up of three basic units: the crate, the power supply, and the blower drawer. Unless specified otherwise in this manual, physical and electrical specifications of the Optima-860 meet or exceed the requirements of a Type CP-1 power supply and ESONE report EUR 4100e.

The crate assembly is constructed of steel and precision cast-aluminum upper and lower racks for long, trouble-free use. Only the highest quality components are employed throughout for high operational reliability. The power supply's modular construction assures ease of maintenance and minimum downtime.

The precision construction of the crate allows CAMAC modules to be inserted and removed while the power supply is on, thereby minimizing the downtime required to replace defective modules.

All outputs of the power supply are protected from overvoltage and overcurrent. No damage to the power supply results if there is a continuous short-circuit. A thermal warning and a thermal-cutoff switch protect the power supply whenever the internal temperature exceeds a safe limit.

Optional features include 6-fan blower (preferred), and a voltage monitor that provides a status bit whenever any output voltage deviates from the normal output level, or if there is a thermal overload.

TECHNICAL SPECIFICATIONS:
Mechanical:
- Width: 22.4 in.
- Height: 12.3 in.
- Depth: 21.6 in. behind front panel
- Weight: 88 lb

Electrical:
- Input:
  115 V +10%/-12% Vac, 60 Hz, standard
  230 V +10%/-12% Vac, 47 Hz to 64 Hz, optional
  100 V +10%/-12% Vac, 47 Hz to 64 Hz, optional
- Output voltage and current:
  ±6 V at 0 A to 50 A, current shared to 85 A total
  ±24 V at 0 A to 6 A, current shared to 12 A total
  ±12 V at 0 A to 3 A, current shared to 24 V output
- Output power: 550 W at 25°C derated to 500 W at 50°C

NOTE

OUTPUT POWER is the sum of two groups of output voltages multiplied by their respective load currents. The sum of the two groups MUST NOT EXCEED 550 W at 25°C and must be derated to 500 W at 50°C.

Group 1 outputs: +6V, +24V, and ±12V combined output power must not exceed 400 W at 25°C. The ±12V output currents are considered +24V outputs for power calculations.

Group 2 outputs: −6V and −24V combined output power must not exceed 400 W at 25°C and 375 W at 50°C.

- Line and load regulation:
  ±0.2% for ±6-V and ±24-V outputs
  2.0% for ±12-V output
- Ripple and noise: 10 mV peak to peak, 50-MHz bandwidth
- Transient recovery: 50 microseconds, typical
- Long-term stability: less than 0.2% for 24 hr after 1 hr warmup (constant ambient temperature)
- Temperature coefficient: 0.02%/°C, maximum
- Remote sensing: ±6-V, ±24-V outputs
- Circuit protection: fuses on pass transistors and on main ac power lines
- Overload protection: overload and overcurrent protection on all outputs
- Thermal protection: both heat sinks sensed for overtemperature; thermal overload indicator on front panel of blower; overtemperature sensor on heat sinks to cut off power
- Metering: ±6 V and ±24 V and current
- Test jacks: all output voltages
Status-bit monitor: optional monitoring of all outputs and thermal overload overtemperature; and provides relay contact closure when limits are exceeded.

Blower air flow: over 300 cfm with unloaded crate, or over 800 cfm with 6-fan blower.

Environmental:
- Operating temperature: 0°C to 50°C (32°F to 122°F) at less than 90% relative humidity

**NOTE:**

To achieve adequate cooling when running at full power, the MAXIMA power supply MUST be installed in a Standard Engineering Corp. crate with ventilation cutouts on both sides of the power supply.

**OPERATING INSTRUCTIONS:**

**Installation:**
Before the crate is mounted in the rack, the power supply must first be removed. After the crate is mounted, the power supply can be reinstalled as shown in drawing No. 106816, Power Supply Removal Diagram. The ac-line cord must be connected to 115 Vac, 60 Hz.

**Turn-On:**
The power supply must not be turned on until Dataway PG-26 has been connected to the power supply as shown in drawing No. 106816. Although no damage results from turning on the power prematurely, one or more regulators can go into overvoltage. When the power is turned on, the amber light on the front panel of the blower comes on, and the front-panel meter indicates the proper output voltages. If any output voltage reads low, it is necessary to check the meter for current. If there is current flow, the related output is probably in overvoltage. If so, the power must be shut off for about 10 seconds. If the condition persists when the power is turned on again, the fuse(s) should be checked for that output voltage. Fuses, which are located under the cover at the rear of the power supply, are visible through a plastic window (see drawing No. 106812). A blown fuse, which usually indicates an internal circuit failure, should not be replaced without first checking pass transistors. The maximum power is 550 W. Exceeding this maximum load can cause damage to the power supply.

**Overvoltage:**
All output voltages are protected by overvoltage circuits that can be activated by ac line transients, load-current changes, or internal circuit failure. When an overvoltage circuit is activated, a silicon cont rectifier (SCR) is turned on, placing a short across the load. The overcurrent protection circuit limits the current to a safe value. The ac power must then be turned off for approximately 10 seconds to deactivate the overvoltage circuit.

**Overcurrent Short Circuit:**
The outputs of the power supply are protected against overcurrent and short circuits by fold-back type current-limiting circuits. A load beyond the current trip point causes the output current to be reduced to a safe value. The current trip level for each output is set approximately 10% over the maximum current. On the ±6-V outputs, the current trip level must NEVER be higher than 10% over the maximum current; otherwise, the power supply is damaged.

**Voltage Adjustment:**
Voltage adjustment potentiometers for the ±6-V and ±24-V outputs are located at the rear of the power supply (see drawing No. 105812, Major Feature Callout). Each potentiometer allows a minimum adjustment of 2%. The output voltage should be measured at the Dataway when making voltage adjustments.

**Blower Front-Panel Test Jacks:**
Adjacent to the meter on the front panel of the blow are test jacks for measuring the approximate voltage of the Dataway. The test jacks must not be used to measure the power supply regulation or ripple.

**Thermal Overload:**
Four thermal switches incorporated in the design the power supply protect it from overloads. Two of these thermal switches are mounted on each of the two heat sinks.
If either heat sink overheats, one of its thermal switches disconnects the main power. One therm switch on each heat sink turns on the thermal overload indicator on the front panel of the blower if excessive power is being drawn from the heat sink or if the heatsink overheats from inadequate air flow. If the temperature is too high on an ambient temperature. The other thermal switch disconnects the main power if a maximum safe heat sink is reached.

**CIRCUIT DESCRIPTION:**

**General:**
The different sections of the Maxima-885 are shown in drawing No. 106808, PCS 800 Series Block Diagram.
The blower section contains the voltage and current monitoring circuitry and meter, the overtemperature indicator, the output test jacks, the ac power on/off switch, and the status-bit option. The crate houses the blower and contains the Dataway. The power supply contains all the circuitry and components for the regulated output voltages. Drawing No. 106812 shows the location of all controls, indicators, and mechanical features.

Blower Section:

The blower section is described in drawing No. 106810, Simplified Blower Block Diagram; drawing No. SD280100, Schematic Blower Chassis; drawing No. 288500, Assembly Meter Board; and drawing No. SD288500, Schematic Meter PCB. The blower schematic drawing shows the interconnection between the power supply and the blower and blower fans. It also shows the interconnections to the meter printed-circuit board.

The meter printed-circuit board contains the voltage-input metering switch, associated voltage-drop resistors, and calibration potentiometers R2, R3, R4, R5, and R6. R2 is set for a meter indication of 6 V when the +6-V pushbutton has been selected. Once this setting is properly made, the remaining voltages are calibrated. R3, R4, R5, and R6 are the current calibration potentiometer for ±6 and ±24 currents. These are adjusted to make the meter read the same as the load current at full load.

The status-bit option is shown on drawing No. 106555, Schematic Status Bit Option; and drawing No. 106567, Assembly PCB Status Bit Option. All voltages (±6, ±12, and ±24) are added in a precision resistor network, and the results are compared to precision voltage references. Two differential comparators monitor plus and minus output voltages. The output of the comparator drives the output relay through a relay driver circuit called Q1-Q2. Relay K1 is energized when a fault is present. R11 and R16 provide plus and minus voltage sensitivities, respectively, and are factory set to cause the status bit change when any input voltage changes more than ±1.5% from the nominal.

Power Supply:

Drawing No. BD106960, Block Diagram CAMAC Power Supply, shows the basic elements of the power supply and their relation to the crate or the blower. The two heat sinks and associated regulator printed-circuit board are subassemblies that can be removed easily.

Drawing No. SD106961, Schematic Chassis Wiring PS200/800 Power Supply, shows the interconnections for the blower, the crate, the power supply transformer, the rectifiers, the filters with associated fusing, and the fan circuitry. The drawing also shows connections to the removable heat sinks assemblies.

The outputs of the transformer T1 feed full-wave rectifiers with capacitor filtering. Drawing No. MD106947, Major Component Diagram CAMAC shows the location of all chassis components and subassemblies.

Heat-Sink Assemblies:

There are two heat-sink assemblies: the positive heat-sink assembly containing all the circuitry for +6-V, +24-V, and ±12-V outputs; and the negative heat-sink assembly containing all the circuitry for −6-V and −24-V outputs. Both heatsinks, which plug into the chassis wiring, are readily accessible for maintenance. The negative heat-sink assembly can be extended easily out of the chassis to allow for hot testing on both sides of the assembly.

Positive Heat-Sink Assembly:

Drawing No. 106962, Assembly Positive Heat Sink Power Supply CAMAC I, shows the location of all the components in the assembly. Drawing No. SD106963, Schematic Regulator, shows the entire circuitry of the heat-sink assembly. The heat-sink assembly contains the pass-transistor circuitry, the driver, the regulator, and the overvoltage and overcurrent circuitry for the +6-V, +24-V, and ±12-V outputs.

Each regulator circuit utilizes a precision voltage regulator integrated circuit (IC) 723, which includes a stable voltage reference and overcurrent circuitry. A voltage divider across the output of each supply feeds the precision regulator IC. The output of the regulator IC is connected to a series of driver transistors, which in turn drive the series pass transistor (no drive transistor is required in the ±12-V outputs). The precision regulator for the +6-V output derives its supply voltage from the +24 V in order to satisfy the minimum 12-V input-to-output of the regulator IC.

Each pass transistor and power driver is individually fused. These fuses, which are visible through the windows in the rear cover, are located along the outer edge of the regulator printed-circuit board for easy access and removal. The fuses are used to protect the power supply in case of a pass transistor or circuit failure. If a fuse blows, a new fuse must not be inserted until after the pass transistor has been checked.

Failure to do so can lead to additional circuit failure. The positive output overcurrent circuits utilize the precision regulator overcurrent capability. The load current is sensed by series low-value resistors whose output voltage turns on the overcurrent circuit of the regulator IC when the maximum load current is reached. Current feedback limiting is achieved in the positive regulators by R11 and R13, providing a positive feedback current to pin 2 of the regulator IC.

The current limit trip point is present at the factory and should not need adjusting.
The current-limiting circuitry of the -12-V output incorporates a separate transistor Q15 that senses the voltage across the current-sense resistor. When turned on because of an overcurrent, the output of Q15 shorts out the base of another pass transistor Q14. Positive feedback is provided through R75 to the current-limit sensor transistor Q15.

Both the +6-V and the +24-V outputs contain overvoltage protection sensors, which turn on the SCR crowbars if an overvoltage occurs. The +6-V and the +24-V outputs are set to crowbar approximately 7 V and 26 V, respectively. The ±12-V outputs utilize the overvoltage circuits of the ±24-V outputs by coupling through the voltage-dropping zener diodes CR1 and CR3. Once an SCR has been turned on, the power supply must be off for approximately 10 seconds to reset the SCR.

Both the +6-V and the +24-V output driver circuits incorporate frequency-shaping networks R67-C18 and R68-C19 to achieve a high degree of stability.

**Negative Heat-Sink Assembly:**

The negative heat-sink assembly is similar to the positive heat-sink assembly and also plugs into the chassis wiring (see drawing No. 106965, Assembly Neg Heat Sink, and drawing No. SD106966, Schematic Regulator -6 and -24 Vdc). The heat-sink assembly contains the pass transistors, the drivers, the regulators, and the overvoltage and overcurrent circuitry for the -6-V and -24-V outputs.

Because of the negative output, the precision voltage regulator U1 and U3 are operated in the inverted mode. Except for the current trip circuitry, the negative and the positive circuits are essentially the same. Whereas the positive circuits utilize the internal current-limiting circuit of the regulator IC, the negative circuits incorporate external current-limiting transistors Q8 and Q13. When the voltage across the sense resistor R11 or R32 and R33 exceeds the bias required to turn on Q8 or Q13, the base-to-emitter voltage of the drive transistor Q7 and Q12 is reduced, causing the output voltage to fall almost to zero volts. Each current trip circuit has current foldback limiting by biasing Q8 and Q13 to a more negative source.

The current-limiting trip point is preset at the factory and should not require field adjustment.

**Camac Crate:**

The crate houses the removable blower tray, supports the power supply, and incorporates the type of Dataway bus developed by the University of California Lawrence Berkeley Laboratory. Precision cast-and-machined guide rails insure the proper alignment of CAMAC modules with their Dataway connectors.

Drawing No. 106697, Dataway Wiring, shows the power buses and power-and-sense wiring to and from the Dataway.

**Service and Maintenance:**

The modular design of the power supply (see drawing No. MD106947) makes manufacturing, repair, maintenance easy to do.

If the user does not have personnel qualified to do repairs, the defective assembly can be returned to the factory. A replacement assembly usually can be shipped within 24 hr.

**Heat-Sink Assemblies:**

The two heat-sinks are plug-in assemblies that are easily removed for replacement or repair. Regulator schematics (drawing No. SD106963 or drawing No. SD106966). The positive heat-sink assembly is adjacent to the power supply, and all of its components are easily accessible (see drawing No. MD106947) ICs and low-powered transistors are mounted in sockets. If the heat sink has to be removed, the components are disconnected from the printed-circuit board, and the thermal switches, then four mounting screws holding the heat sink to the base plate can be removed. Two guide pins align the heat-sink hole with the mounting-plate holes, making it easy to reinstall the heat sink.

The negative heat sink is located below the positive heat sink. Two guide pins extend from the mounting plate through the heat sink, allowing the negative heat sink to be pulled out for supplementary tests. All components are accessed from the extended position. All components are accessible. As with the positive heat sink, all integrated circuits and low-powered transistors are mounted in sockets. A second set of support Pins, which are used only for alignment of the fins of the negative heat sink, provide a solid, fixed, and extended port for the heat sink. By sliding the heat sink on mounting guide rails and holes over to the troubleholes, the heat sink is held in place in the extended position.

To extend or remove the negative heat sink, the mounting screws holding the heat sink to the plate are removed first.

**Note:**

Do not test the negative heat sink under full power except for brief moments, because the heat sink must be properly cooled in the extended position.

**Fans and Filters:**

The blower fans are the lifetime-lubricated type. Filters should be inspected periodically and cleaned by immersion in soap and warm water. A filter can be removed easily pulling it out from the panel; replaced by locking it back in.
Fuses:
Fuses other than the two main line fuses protect the power supply. These fuses are in series with each pass transistor and normally do not blow unless a pass transistor or a driver transistor has shorted.

NOTE
These fuses must not be replaced without first checking for transistor shorts. To do so can result in circuitry damage.

Test Points:
Test jacks for all output voltages are provided on the front panel. Because the test jacks are connected to regulator sense leads and through 2.2 kilohm resistors, the jacks must not be used to test power-supply regulation or ripple and noise. These measurements must be made where the sense leads are terminated on the Dataway.

Voltage Adjustment:
Voltage-adjustment potentiometers are provided for each regulator on the regulator printed-circuit board. The ±6-V and ±24-V adjustments are accessible through the rear of the power supply.

Overcurrent:
The overcurrent trip points are factory set at 5% to 10% above the rated output current. The adjustment potentiometers are R33 and R66 on the positive heat sink and R12 and R34 on the negative heat sink. The ±6-V output current fold-back trip points are set by adjusting the potentiometer until the output voltage starts to drop off at 5% to 10% above the maximum load current. The ±24-V output current adjustment potentiometers are adjusted for a 0.5-A to 1.0-A current with the output shorted.

REPLACEABLE PARTS:

NOTE
Readily available standard components have been used with this unit whenever possible. Special components or subassemblies, however, can be obtained directly from Standard Engineering.
BLOWER DRAWER

VI METER #
METER SWITCHING

VI
SWAC
AC IN

CAMAC POWER SUPPLY

PG26
PG27

CAMAC CRATE

DATAWAY

PWR SWITCH

S6

P6

PG26
PG27

t6, t12, t24

DIMENSIONAL TOLERANCES UNLESS OTHERWISE NOTED
DECIMAL ANG.

SYM DESCRIPTION DATE APPROVAL

DECIMAL

SCALE: XXXX.

DESIGN DATE

DRAWN BY: c. hannel DATE 6-1-82

CHECK DATE

APPRO DATE

REVISIONS

DSP Technology

B 106808 B
NOTE: ALL DIMENSIONS ARE IN INCHES.
NOTES

1. DO NOT MOUNT SCREWS 37.
   SPACERS 38 AND WASHERS 40.
   AT THIS TIME, KEEP WITH
   KIT FOR SUBSEQUENT ASSEMBLY.

CONN PIN COLOR PCB
1 BAN AC LOW
2 RED HI TEMP
3
4 YEL +24
5 GRN +12
6 BLU +6
7 VIO -6
8 GRY -12
9 WHT -24
10 BLK COM

-2 VERSION
LEMO
LUG BLK LIG 13"
CENTER RED S 13"

20 AWG BUS WIRE SLEEVED

DSP TECHNOLOGY INC.
TO REMOVE BLOWER:
1. UNPLUG POWER CORD
2. UNSCREW BLOWER FRONT PANEL LOCKING SCREWS (SEE CALLOUT)
3. PULL BLOWER TRAY OUT

TO INSTALL BLOWER:
1. UNPLUG POWER CORD.
2. PUSH BLOWER TRAY INTO GROOVES AS SHOWN.
3. TIGHTEN LOCKING SCREWS INTO CRATE.
4. PLUG IN POWER CORD.
NOTES:

- **SILKSCREEN IS WRONG** - INSTALL J1 WITH FLAT SIDE TOWARD TOP OF BOARD.
- ADD JUMPERS AS SHOWN:
  - LCD-PIN 8 TO PIN 1
  - PIN 1 TO PIN 39
  - PIN 28 TO PIN 39
  USE 20 AWG KYNAR WIRE.
- JUMPER AS SHOWN FOR STANDARD POSITION USING 28 AWG BUS WIRE.

**DETAIL A**

**COMPONENT SIDE**

**SOLDER SIDE**

- **SCREW** 4-40 X 1/4
  - PN 120441
  - (2 PLCS)

- **SPACER** 4-40 X 3/8
  - PN 124042
  - (2 PLCS)
TO REMOVE POWER SUPPLY:

1. Unplug power cord.
2. Remove the 4 locking screws - hold the panel and pull the locking latches until latch arms dis-engage crown.
3. Pull power supply out until sufficient room is available to disconnect 76-36.
   CAUTION: DO NOT PULL POWER SUPPLY TO PULL OUT.
5. Disconnect PG-25.
6. Pull power supply out from supporting shelf.

TO INSTALL:

1. Reverse above procedure.
   BE SURE TO TURN LATCHES SECURELY.
PRODUCT WARRANTY

(Excludes Software)

DSP TECHNOLOGY ("DSP") warrants its products to be free from defects in material and workmanship and to meet DSP's performance specifications. The warranty period is one year from the date of shipment to the buyer. The warranty is limited by the paragraphs below.

RETURN TO FACTORY

If a buyer discovers a defect in a DSP product covered by this agreement, buyer's exclusive remedy is to ship the product back to DSP's Fremont factory, where DSP will, at its option, either repair or replace the product. This remedy applies if DSP receives the returned product on or before the tenth day after the expiration of the warranty period and the buyer notifies DSP of the defect before returning the product.

COST TO BUYER OF REPAIRS OR REPLACEMENT

Buyer must prepay freight charges to DSP. DSP will pay standard return freight to buyer. Buyer will be charged for premium freight if that method of transport is requested by buyer. There is no other charge for repair or replacement during the warranty period.

TRANSFERABLE WARRANTIES

In addition to the foregoing warranty, DSP also provides the buyer the transferrable warranty, if any, provided to DSP by the manufacturers of other products such as terminals and disk systems supplied by SEC as part of a total system.

LIMITATION OF WARRANTY AND LIABILITY

The foregoing constitutes DSP's entire warranty, expressed, implied, and/or statutory (except as to title), and to any other party for any breach of such warranty and for damages, whether direct, special, incidental, or consequential. Other than as expressly provided in this document, no warranties expressed or implied, including any warranty of merchantability or fitness for a particular purpose are made. No employee, representative, or agent or seller has any authority expressed or implied to alter or supplement the terms of this warranty.