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Reference Manual

V32 Series

STD Bus Industrial Card Cages





VERSALOGIC CORPORATION

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V32-Series
STD Bus Industrial Card Cages

REFERENCE MANUAL

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MV32

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1 Introduction

The V32 Series card cages are high quality STD Bus card cages especially suitable for industrial applications. They feature heavy-duty cold-rolled steel construction with a sealed black oxide finish, 5/8" card spacing, card restraint bar, and the V32 five layer backplane with high reliability STD 32 bus connectors.

The V32 Series card cages are available in several sizes and configurations. Cages can be purchased in 4, 6, 8, and 12-slot versions, and are available with table or rack/panel-mount end plates. Other mounting positions are possible by rotating the left and right end plates 180 degrees. Additionally, the mounting flanges can be oriented inwards or outwards.

The V32 Series backplanes are compatible with STD 32 (8, 16, or 32 data bits) and STD 80 (8 data bits) cards. Cards with different data bus sizes can be mixed in a system. The high speed backplane features a .093" multilayer circuit board which provides controlled impedance, reduced capacitance signal lines. STD 32 slot specific functions are provided through slot X (leftmost slot) per the STD 32 specifications. Therefore, slot X is not bused as the other card slots are.

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Card Orientation

STD Bus cards must be oriented correctly when inserted in the card cage. Most board manufacturers provide a card ejector at the top corner of their cards. Be certain to position these card ejectors toward the top of the card cage. For upside down or unusual mounting positions the card ejectors are positioned next to the card retainer bar.

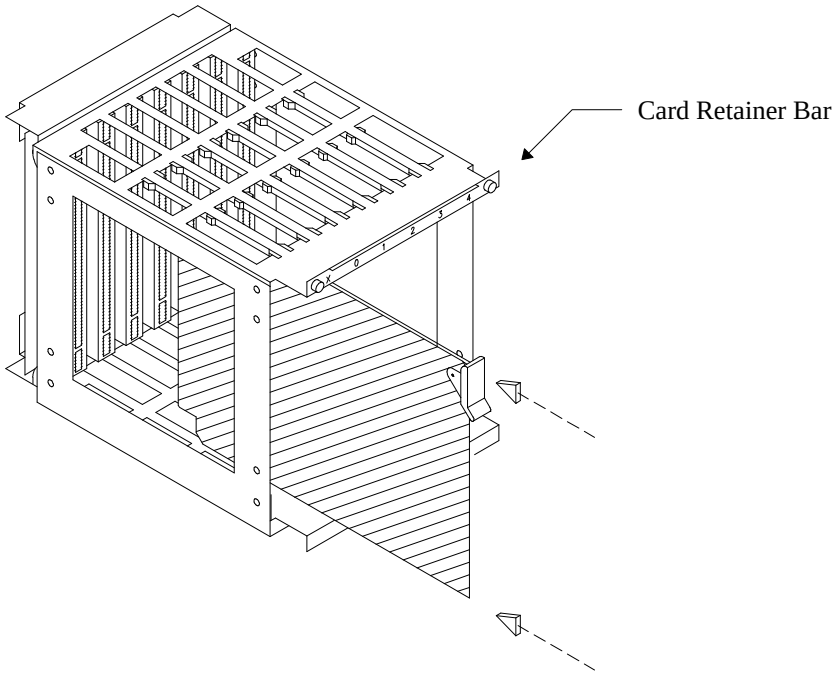


Figure 1. Card Orientation

Caution Cards should be inserted or removed from the STD Bus card cage only when the system power is off.

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Mounting Options

The V32 Series cages can be mounted in a variety of ways by changing the orientation of the end plates. The figures below show the various combinations for the table and rack/panel-mount versions of the cage.

The four threaded mounting holes in the table-mount flanges accept #8-32 screws. The four clearance holes are suitable for mounting the cage using #6 bolts.

The four 0.281" slots in the rack/panel flanges will clear #12 or smaller diameter bolts.

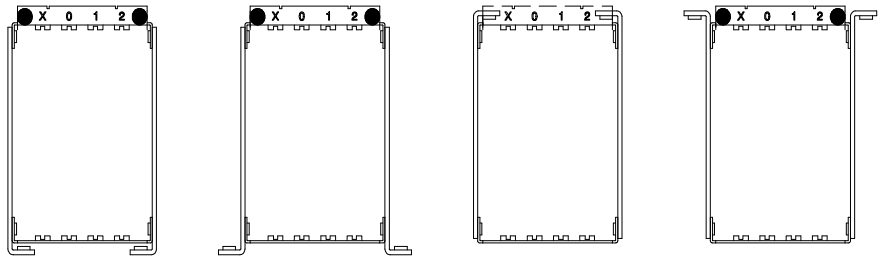


Figure 2. Mounting Configurations (Table Mount)

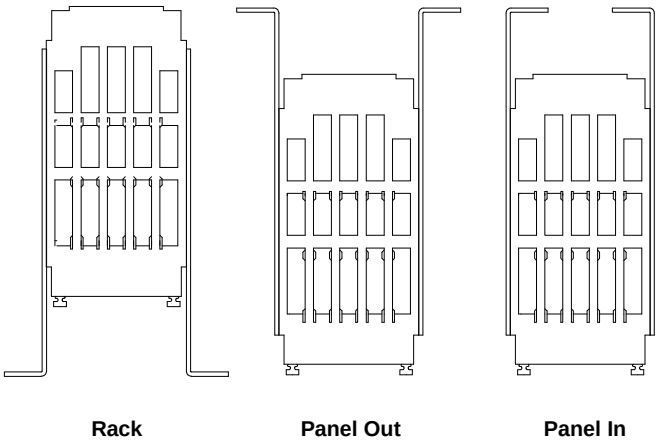
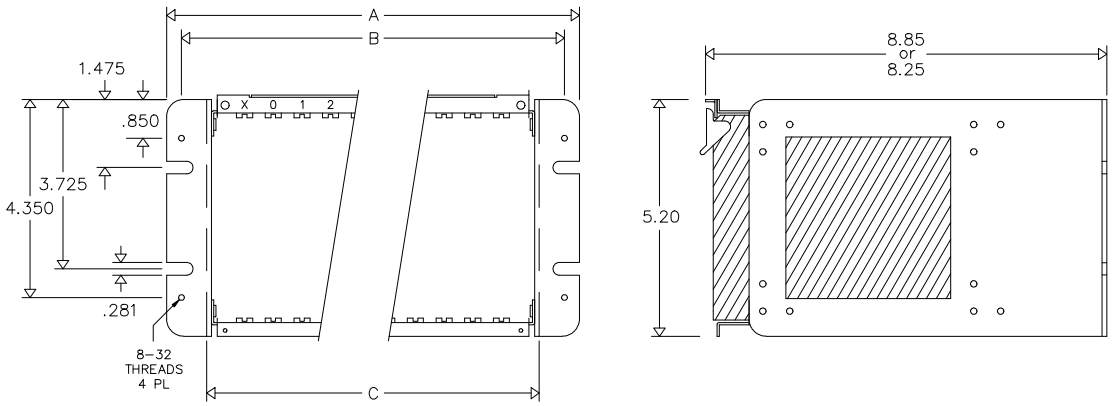


Figure 3. Mounting Configurations (Rack/Panel Mount)

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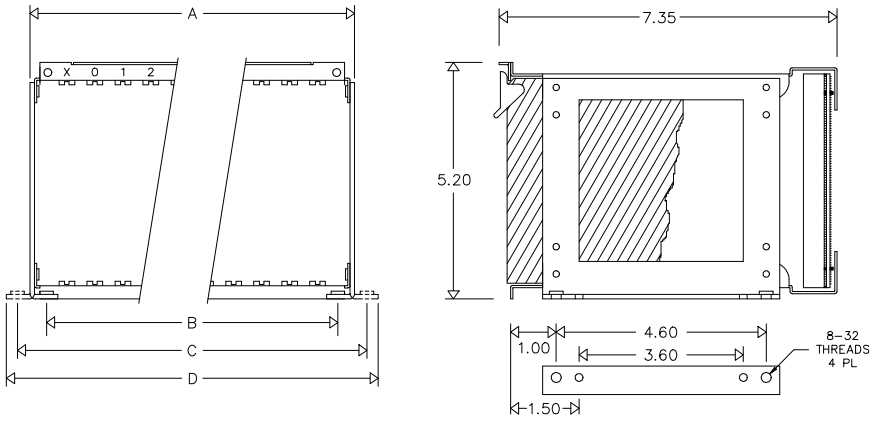
Dimensions



Model	Slots	A	B	C
V32-04R	4	5.25”	4.56”	3.46”
V32-06R	6	6.50”	5.81”	4.71”
V32-08R	8	7.75”	7.06”	5.96”
V32-12R	12	10.25”	9.56”	8.46”

Tolerance = ±0.02”

Figure 4. Overall Dimensions (Panel-Mount Configuration)



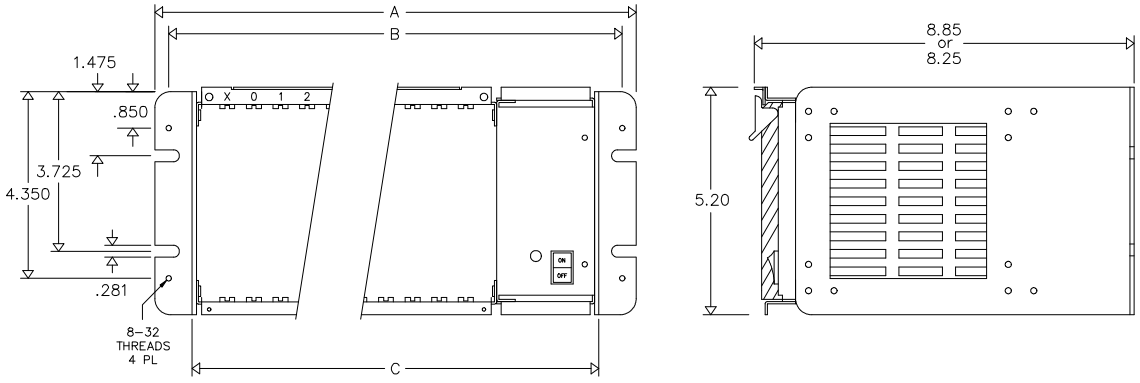
Model	Slots	A	B	C	D
V32-04T	4	3.46”	2.70”	4.04”	4.54”
V32-06T	6	4.71”	3.95”	5.29”	5.79”
V32-08T	8	5.96”	5.20”	6.54”	7.04”
V32-12T	12	8.46”	7.70”	9.04”	9.54”

Tolerance = ±0.02”

Figure 5. Overall Dimensions (Table-Mount Configuration)

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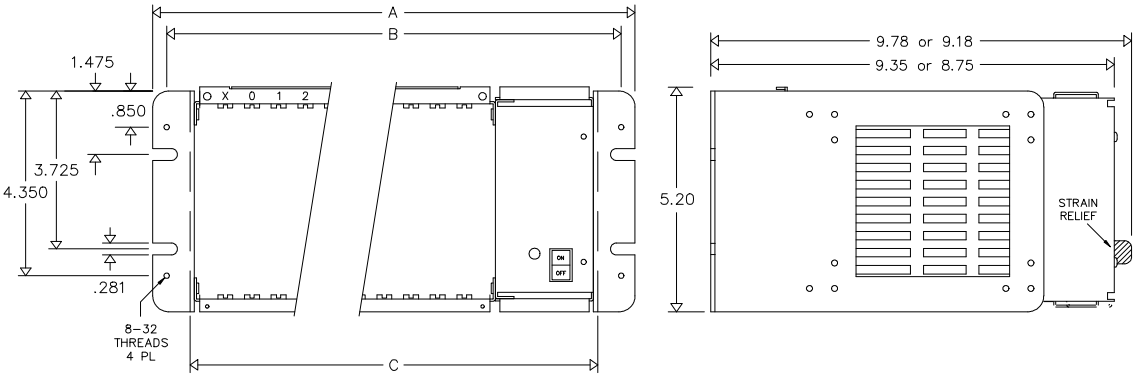
Dimensions with Bolt-On Power Supply



Model	Slots	A	B	C
V32-04R	4	7.50”	6.81”	5.71”
V32-06R	6	8.75”	8.06”	6.96”
V32-08R	8	10.00”	9.31”	8.21”
V32-12R	12	12.50”	11.81”	10.71”

Tolerance = ±0.03”

Figure 6. Overall Dimensions (Panel-Mount Configuration)



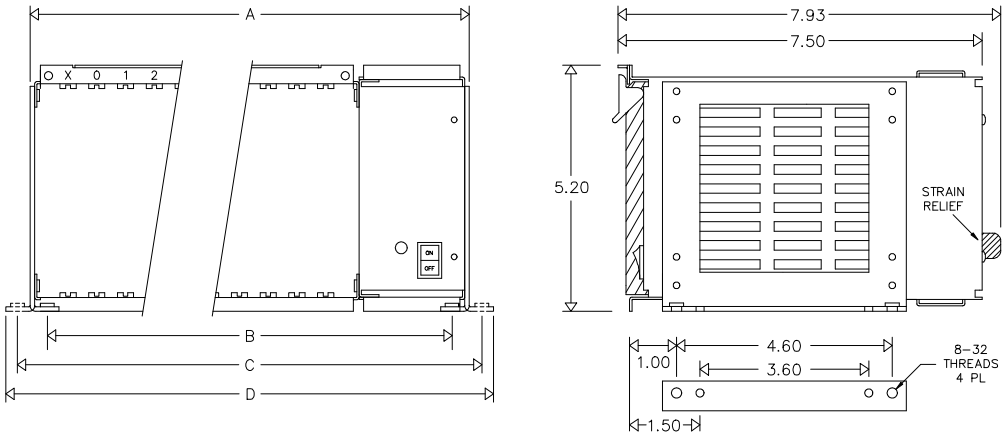
Model	Slots	A	B	C
V32-04R	4	7.50”	6.81”	5.71”
V32-06R	6	8.75”	8.06”	6.96”
V32-08R	8	10.00”	9.31”	8.21”
V32-12R	12	12.50”	11.81”	10.71”

Tolerance = ±0.03”

Figure 7. Overall Dimensions (Rack-Mount Configuration)

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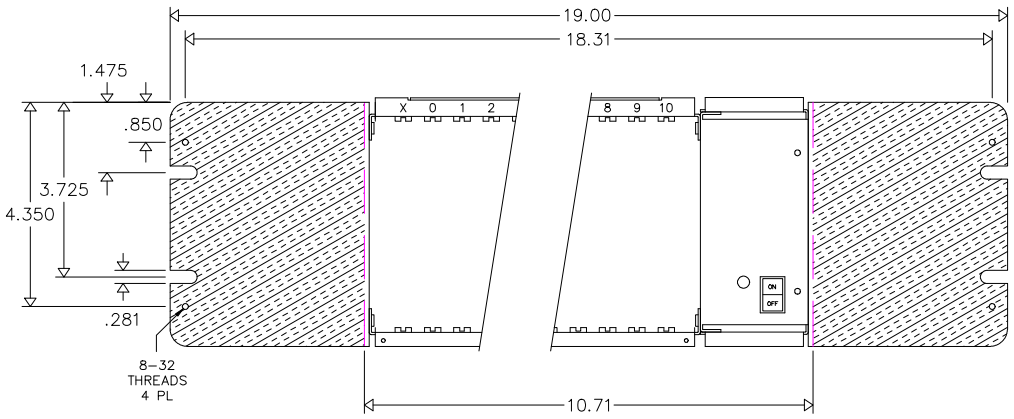
Dimensions with Bolt-On Power Supply



Model	Slots	A	B	C	D
V32-04T	4	5.71”	4.95”	6.29”	6.79”
V32-06T	6	6.96”	6.20”	7.54”	8.04”
V32-08T	8	8.21”	7.45”	8.79”	9.29”
V32-12T	12	10.71”	9.95”	11.29”	11.79”

Tolerance = ±0.030”

Figure 8. Overall Dimensions (Table-Mount Configuration)



Tolerance = ±0.030”

Figure 9. Overall Dimensions (12-Slot, EIA 19" Rack Configuration)

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High Speed Backplane 3

Termination

The V32 series backplanes feature a multilayer circuit board with controlled impedance signal lines. Selected signal lines are terminated on 12 slot backplanes to provide excellent, high speed performance. The termination is applied on both ends of the circuit board with schottky diode clamps to +5V and GND rails. V32 backplanes are designed to operate at bus speeds to 16 MHz.

Compatibility

Full compatibility with STD 80 cards and STD 32 cards is maintained with the V32 backplanes. A variety of STD 80 (8 data bit) and STD 32 (8, 16, or 32 data bit) cards may be mixed in a card cage. STD 32 dynamic bus sizing signals determine which size of data bus is in use at any given time.

Slot X

The leftmost card slot in all STD 32 (V32-Series) cages is designated as Slot X and is not bussed to the other slots. This slot is available to control slot specific signal lines of the STD 32 bus and usually works in conjunction with the permanent master in Slot 0. Slot specific functions include multimaster control, interrupt control, DMA control, and slot addressing. Slot X can accommodate an in-rack power supply if desired.

Priority Chain Signal

On 4, 6, and 8 slot cages, the Priority Chain In (PCI) and a Priority Chain Out (PCO) signal lines can be used as a daisy chain (i.e., card slot dependent) interrupt structure. Each PCO line is connected to the PCI line of the card slot on its left. This results in the card slot in the far right position being the highest priority slot. Slot 0 is the lowest priority slot. Slot X is not included in the priority chain.

On 12 slot cages, the PCI and PCO signals are connected together and bussed across all connectors to distribute +3.3V power.

Ground Lines

The two power supply ground lines, GND (+5V ground) and AUX GND (±12V ground), are not tied together on the backplane. Normally these two grounds must be connected together. The ideal location for this connection is at the power supply or at the STD card that requires the common ground. All VersaLogic power supplies connect both grounds together.

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Power Supply Options

The STD Bus system can be powered with an in-slot power supply such as VersaLogic's VL-PSC card in Slot X, a VL-PS35/50/80/100 series bolt on power supply, or an external stand alone power supply. Connection points are supplied on the backplane for power supply and push button reset switch connections.

External Connections

In addition to the STD Bus boards which plug into the bus, a number of external connections may be made to the motherboard. Pads for these connections are provided along the left and right edges of the backplane. The available connection points are:

Signal	Description
+5V	Connection to the +5 volt power supply line.
GND	Ground connection for the +5 volt power supply.
AUX+ (+12V)	Connection to +12 volt power supply line.
AUX GND	Ground connection for the ±12 volt power supply. AUX GND should be tied to GND at the power supply for systems which need these two grounds to be common.
AUX– (–12V)	Connection to the –12 volt power supply line.
PBRESET	Connection to a system reset push button switch (normally open). Short to GND to initiate a system reset.
+3.3V	Connection to the +3.3 volt power supply line. (12 slot cage only).

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External Connections

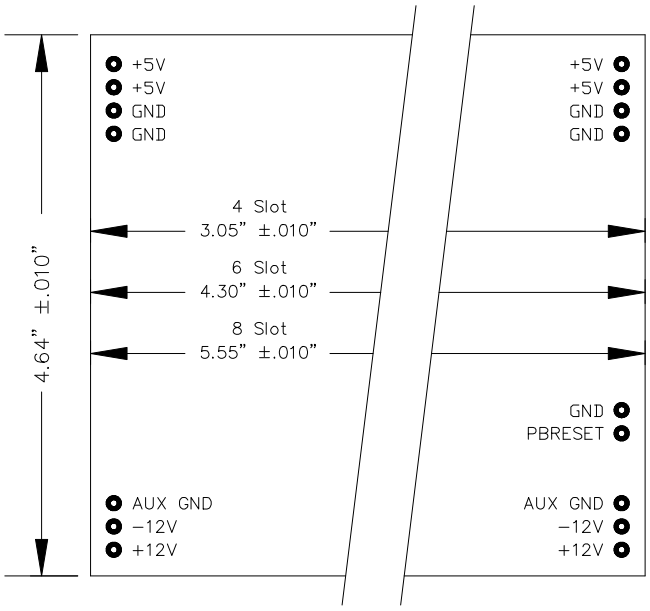


Figure 10. External Connections (4, 6, and 8-Slot Backplanes)

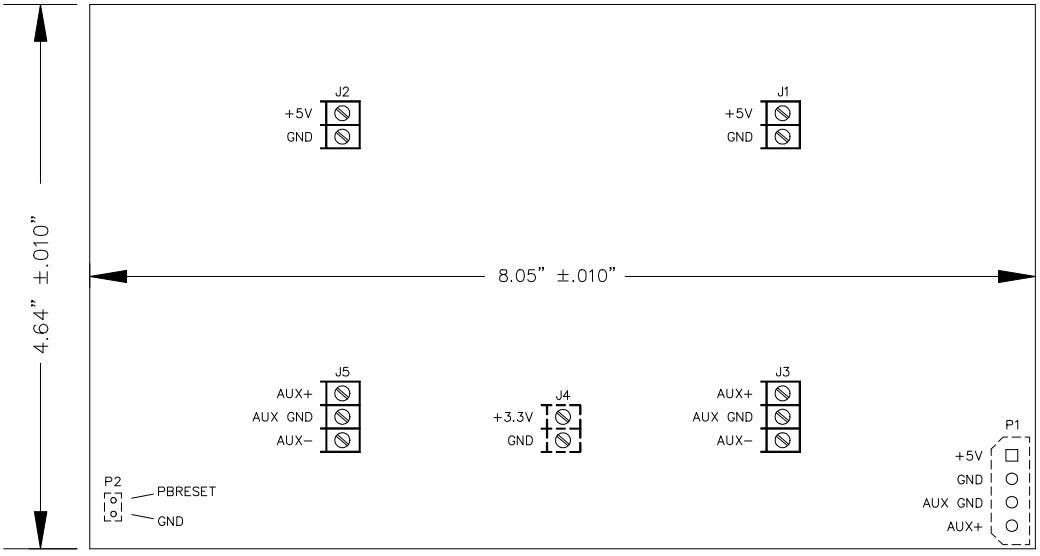


Figure 11. External Connections (12-Slot Backplane)

Optional Disk Drive Power Connector

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STD 32 Connector Pinouts

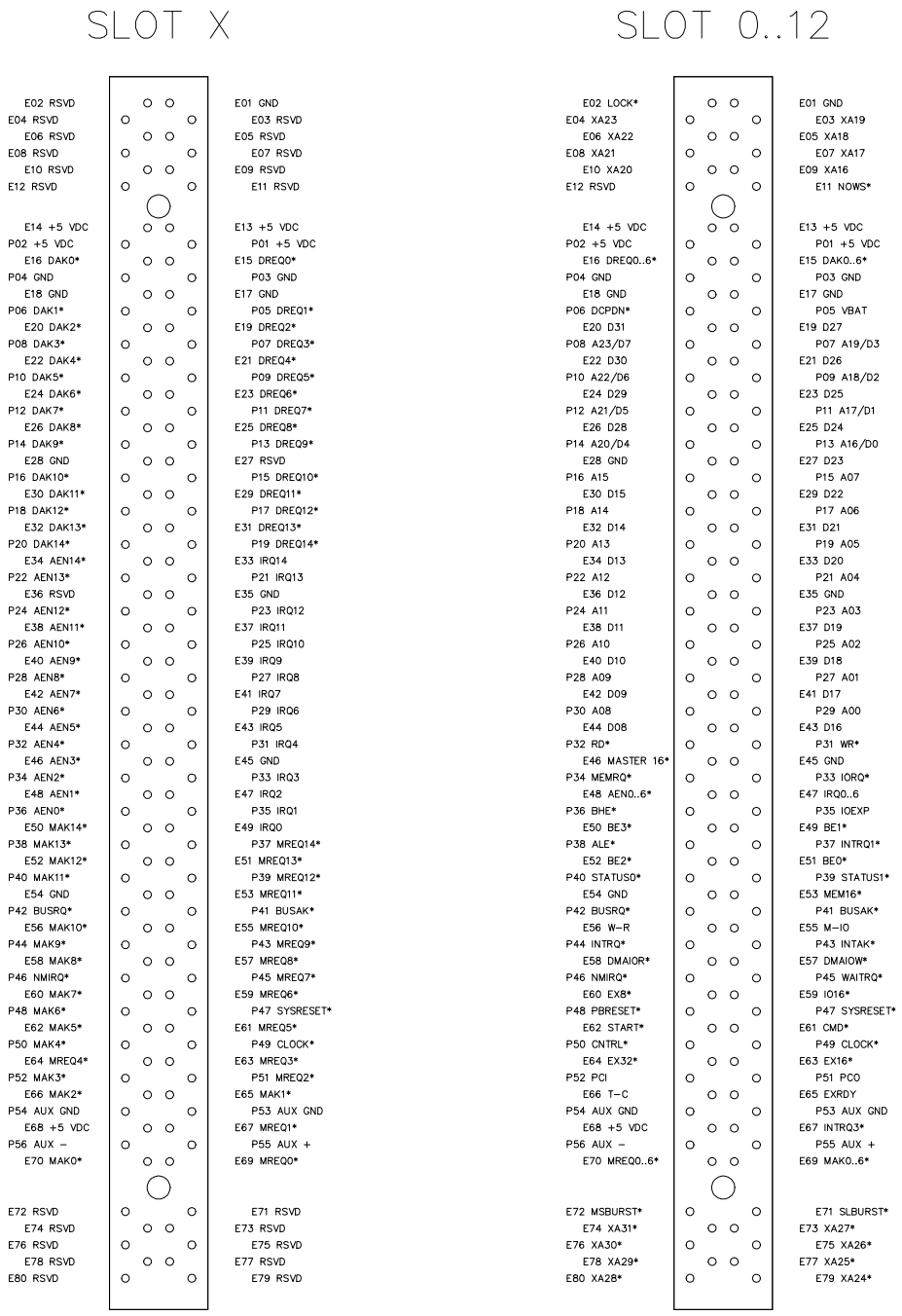


Figure 12. STD 32 Connector Pinouts

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Schematics

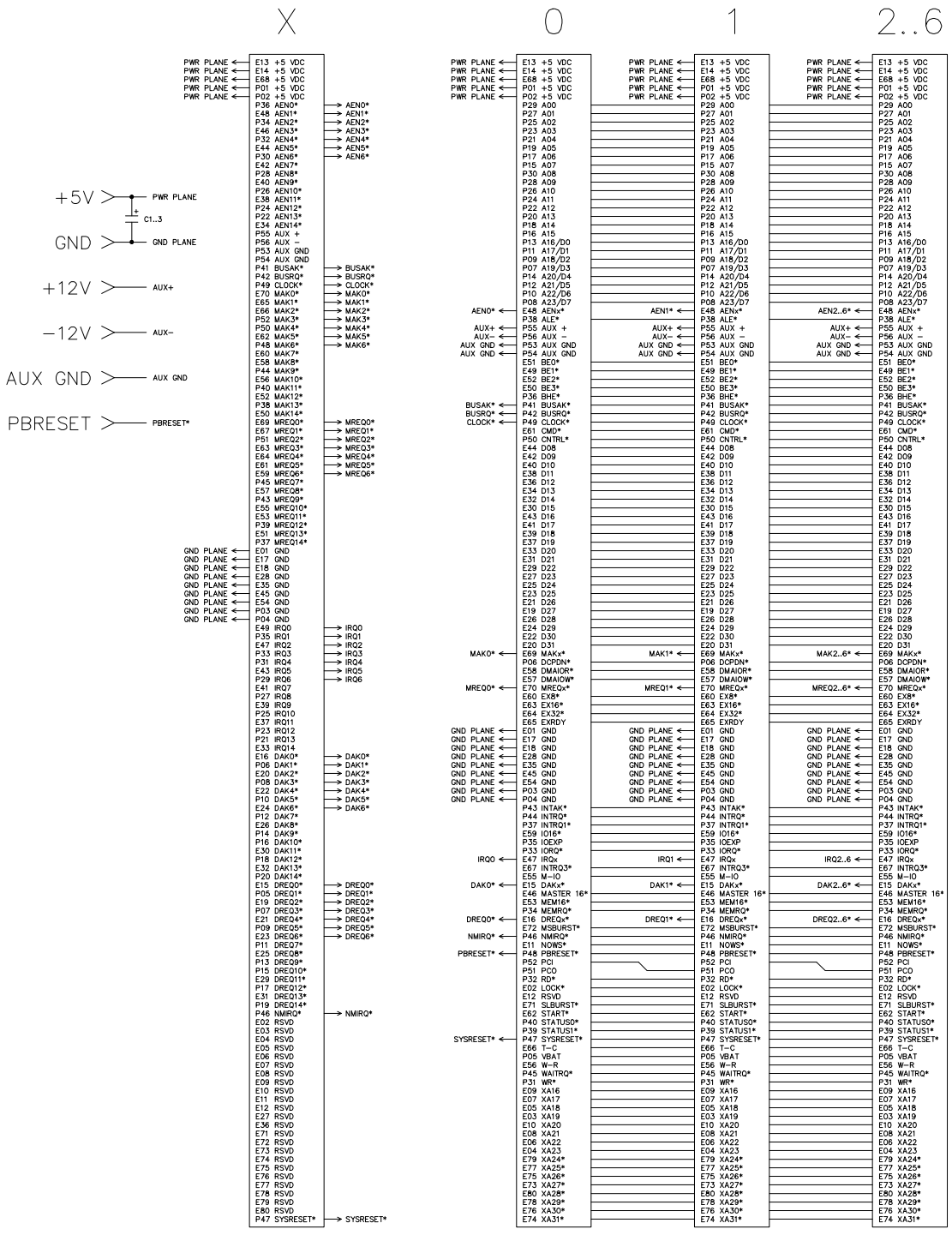


Figure 13. Schematic Diagram (4, 6, 8-Slot Backplane)

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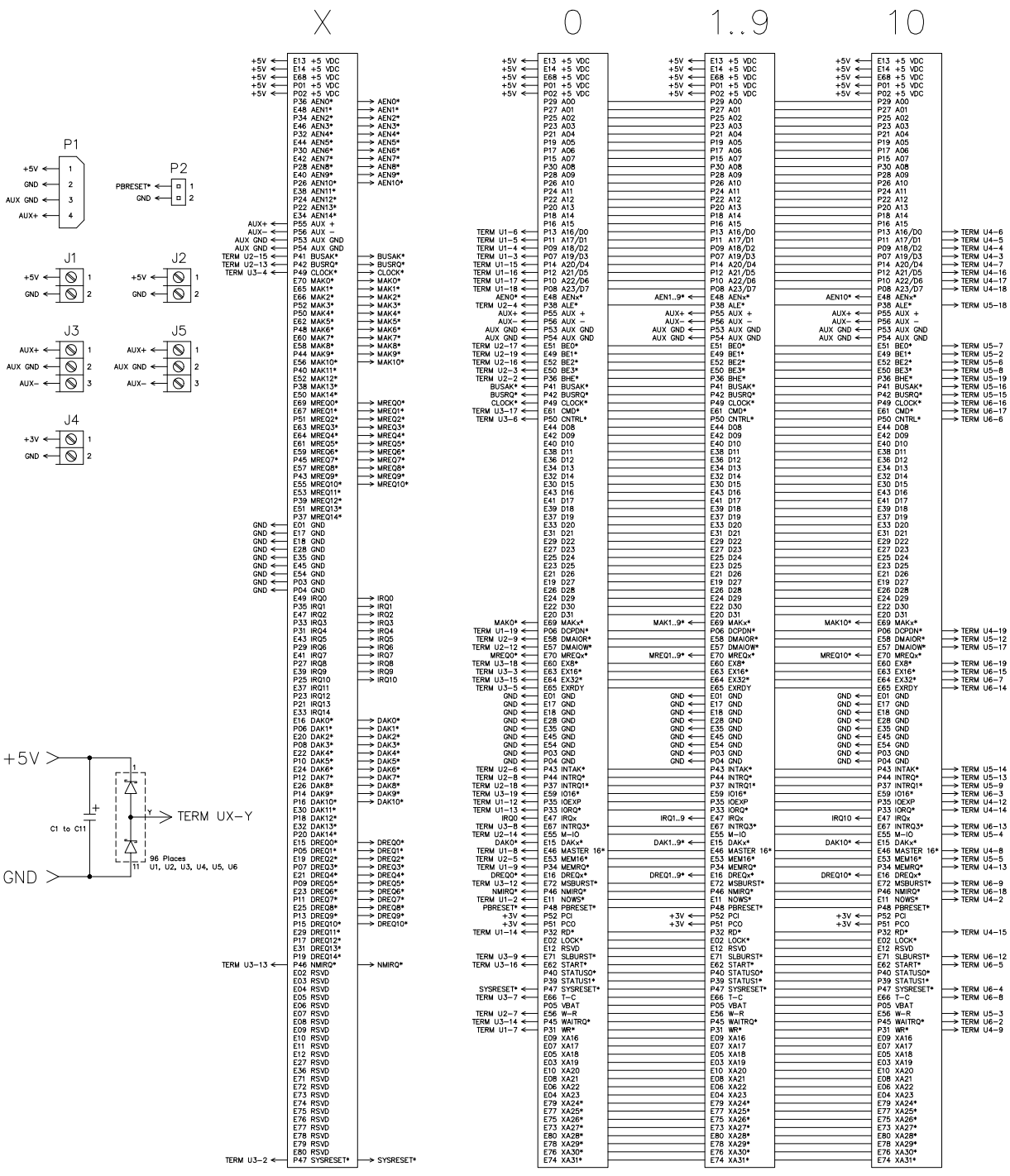


Figure 14. Schematic Diagram (12-Slot Backplane)

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Specifications

MOTHERBOARD CONSTRUCTION:

- Controlled impedance, high speed, low capacitance signal lines
- Multilayer .093" PCB
- Gold-plated, hemispherical knuckle card connector contacts

CARD CAGE CONSTRUCTION:

- Sturdy cold rolled steel with sealed black finish
- Fully ventilated card slots
- Anti-vibration/latch bar with slot numbers

OPERATING TEMPERATURE:

- –40°C to +85°C

POWER BUS RATING:

- +5V @ 20 Amps (4 Amps per slot) maximum
- +12V @ 5 Amps (2.5 Amps per slot) maximum
- +3.3 @ 5 Amps (2.5 Amps per slot) maximum

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