WinSystems®
STD BUS

CC Series 3/4" Card Cages & Backplanes

FEATURES

- Available in 2-, 4-, 6-, 8-, 9-, 12-, 16-, and 21-slot versions
- Rugged alodine aluminum construction including end plates and mounting bars that won't rust
- High strength, precision-construction card cage configurations with backplanes on 0.75 inch spacing
- 50W and 100W power supplies available
- Self-lubricating card guides with retention tabs
- Three mounting configurations:
  - Wall Mount (for NEMA boxes)
  - Rack Mount (for rack enclosures)
  - Table Mount (for flat surface mounts)
- Excellent backplane design
  - Wide ground and power buses
  - Ground plane on assembly side
  - Supports STD Bus 16-bit data transfers
  - Power status LEDs
  - Vcc bypass capacitor at each connector
  - Optional powerfail detect/brown-out circuit
  - Backplane mounting made on the connectors not to the PC board
  - Gold-plated bellows card edge connectors
  - PCI/PCO jumpers per connector
  - Multiple backplanes supported in a card rack
- Accepts CMOS STD Bus cards
- Optional hold down bar and transorbs

WinSystems' offers a broad line of motherboards, assembled card cages and card cages with power supplies. The card racks and backplanes are available from 2 to 21 slots and are ideal for high performance and demanding STD Bus applications. Specify the size and type of card cage, the number of motherboards and power supply, and WinSystems will ship you a completely assembled and fully tested card cage system.

Motherboards - WinSystems' STD Bus motherboards are available in eight different versions from 2 to 21 slots. Spacing is on 0.75 inch centers. The motherboards support both STD and CMOS STD Bus cards with no termination required.

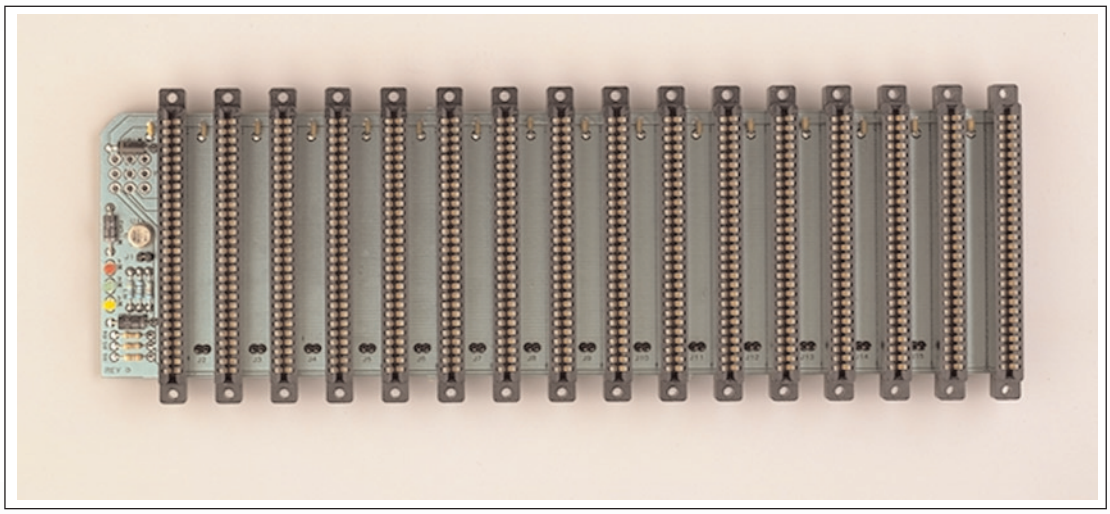
Card Cages - WinSystems' STD Bus card cages are ideal for industrial environments. The design is based on field-proven engineering techniques in order to offer the highest integrity and reliability. Spacing is on 0.75 inch centers with a vertical card orientation to take advantage of convection cooling. They are constructed of aluminum for light weight and strength.

Power Supplies - Two types of high efficiency switching power supplies are available for the card cages: 50W and 100W. They are available in a number of different configurations for both embedded and DOS compatible systems.

Enclosures - WinSystems also offers a 19" instrument case for use with STD Bus DOS or embedded systems. It is an excellent technical design with high functionality with an aesthetically pleasing two-tone beige finish.

Custom Configurations - Multiple motherboards and other options can be installed in a card cage to allow more that one system to occupy a single container. To configure and price a custom motherboard or assembly, contact the WinSystems' factory with your specifications.

MOTHERBOARDS



16 Slot Motherboard with Power Fail Reset, Transorbs and LEDs

Backplane - The foundation of any multi-board system is the backplane. WinSystems' backplane has been designed for high performance STD Bus processors. They can work with all the processors including the new high performance 16/32-bit processors with full 16-bit data transfers. The assembly side of the backplane is a groundplane which reduces noise and crosstalk on the signal lines. It also provides a constant characteristic impedance necessary for good transmission line design. The signal lines are narrow to reduce adjacent channel coupling.

Each of the STD Bus connectors has a bypass capacitor for Vcc. Wide ground and power traces are used to improve power distribution and reduce the instantaneous voltage shifts due to inductance of the traces.

The motherboard has solder pads on a 3 by 3 grid that will accept up to #16 AWG wire for direct wiring or the WinSystems' cable assembly using a standard Molex 9-pin connector. The Molex connectors, number 03-09-1094 and 03-09-2092 are common industry standard parts. In addition to power and ground, an external battery voltage (VBAT), DC power down signal (DCPD*) inputs are supplied to the backplane through the power connector. Individual motherboards are shipped without a power cable for maximum configuration flexibility.

GND and AUX GND are isolated to allow configuration flexibility and to minimize error voltages due to common ground impedances.

Status LEDs - Three light emitting diodes (LEDs) are on each motherboard to visually indicated the presence or absence of each of the power supply voltages. A different color is assigned to each voltage for easy and instant status recognition. Red is assigned to +5VDC, green is assigned to +12VDC, and yellow is assigned to -12VDC.

Pin	Description
1	+5 volts DC
2	Logic Ground
3	VBAT/VBB#1
4	-12 volts DC
5	Logic Ground
6	DCPD*/VBB#2
7	+12 volts DC
8	AUX Ground
9	PBRESET*

Connectors - The heart of an interconnect system is the edge card connector itself. WinSystems uses only UL approved connectors with gold-plated bifurcated bellows contacts. They are superior to cantilever beam connectors since they provide two beam contacts with two independent spring members and a constant spring tension on the card edge. The contact design enables the connector to have a lower insertion force, a higher withdrawal force and a higher, more consistent normal force. This translates to higher reliability and a better connection since it can absorb load deflection of a card while maintaining sufficient contact force for good electrical connection. Maximum reliability of the bellows connector is assured through superior contact tolerance through environmental stresses including shock, vibration, temperature and humidity variations. Other parameters such as insulation resistance, contact resistance, durability and contact separation force meet all of industry's (and applicable military) specifications for reliability.

Interrupts - If a card slot is not used, the user can maintain the PCI/PCO priority interrupt chain by jumpering terminal points adjacent to each connector provided on the assembly side of each backplane. The highest interrupt priority on all card cages and backplanes start at slot 1 which is adjacent to the power connector. The PCI/PCO interrupt chain is typically only used for Z80 and HD64180 based systems.

Reset - An optional jumper selectable powerfail and brown-out detection circuit is offered on all the backplanes and card cages. A precision 4.5 volt band gap voltage comparator circuit is used to accurately determine the Vcc voltage status. Upon detection of an out-of-tolerance condition, a PBRESET* is generated. This is critically important in order to detect brown-out or powerfail conditions in remote or unattended applications since a microprocessor will act erratically before it shuts down. Also the reset circuit ensures that the power is a nominal 4.5 volts before executing a power-on-reset.

A special suffix is assigned to the card cages only to make the ordering code simpler for Option 3. A "P" suffix replaces the last letter of the ordering code. For example, a four slot wall mount card cage with the power-fail-reset circuit changes from CC4-WM to CC4-WP.

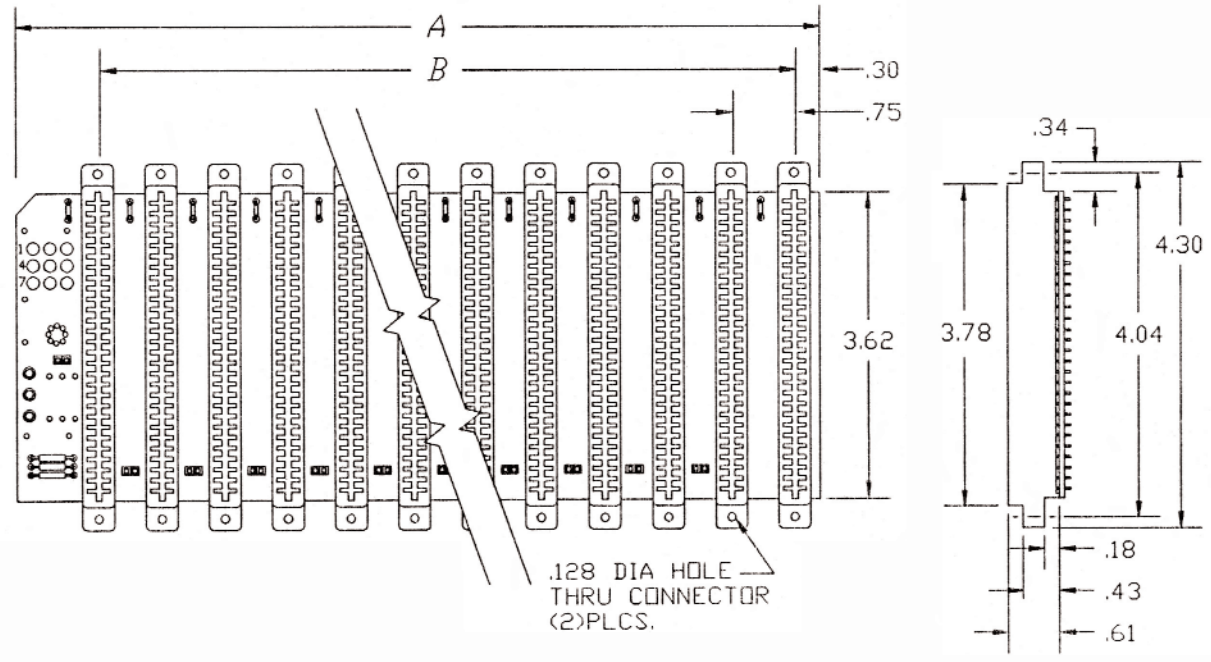
You do not need to order the power-on-reset option if you are using WinSystems' CPUs or single board computers with the motherboards and card racks since this ciruit is resident on our boards.

Transient Protection - Optional transient protection is provided on the +5, +12, and -12 volt lines for spike and surge suppression. This is listed as Option 1 for any motherboard, card cage or powered rack.

ORDERING INFORMATION

MB2	2 slot motherboard
MB4	4 slot motherboard
MB6	6 slot motherboard
MB8	8 slot motherboard
MB9	9 slot motherboard
MB12	12 slot motherboard
MB16	16 slot motherboard
MB21	21 slot motherboard

MODEL NO.	NO. SLOTS	A DIM.	B DIM.
MB2	2	2.05	0.75
MB4	4	3.55	2.25
MB6	6	5.05	3.75
MB8	8	6.55	5.25
MB9	9	7.30	6.00
MB12	12	9.55	8.25
MB16	16	12.55	11.25
MB21	21	16.20	15.00

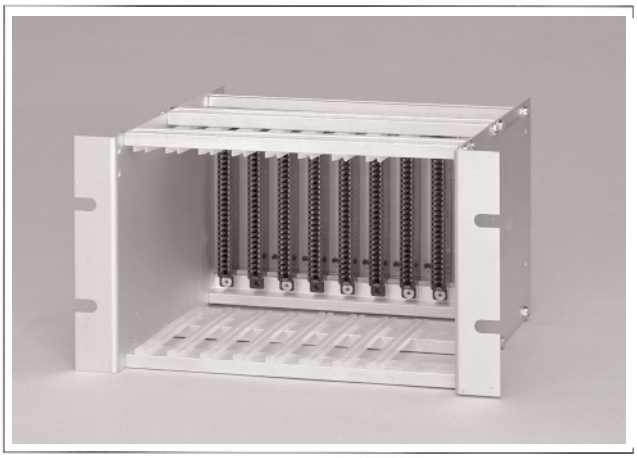


CARD CAGES

Card Cages - The card cages are made from extruded alodine aluminum for the end plates, guide rails and connector rails. This offers both high strength and light weight. The card guides are made from high grade nylon and are self-lubricating, nonconductive, and provide isolation for cards and their components from shock and vibration. The guide tracks have integral card retention tabs to insure a secure fit.

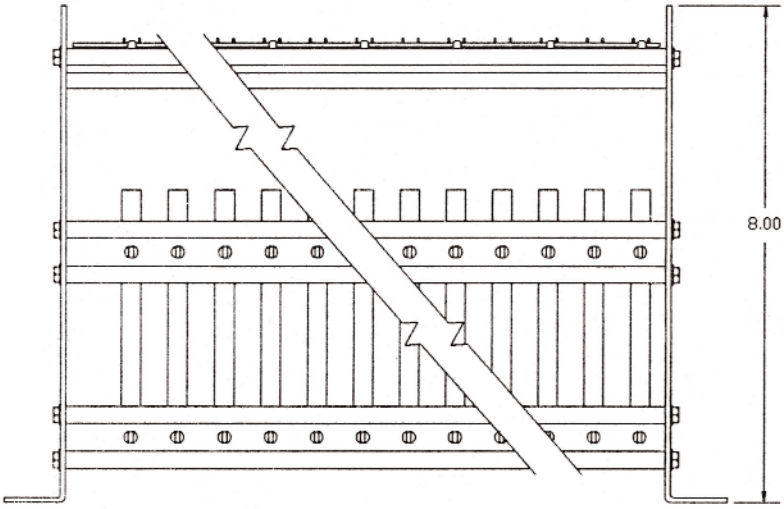
The appropriate WinSystems' motherboard is mounted to the card cage by riveting the connectors to the metal chassis. The connector housing accepts the insertion and withdrawal forces rather than the backplane PCB which adds reliability to the system.

Card Rack Mounting Versatility - Three mounting configurations are available: Rack mount (RM), Table mount with side entry (SE), and Wall mount (WM). All cards cages are supplied with a high performance motherboard and a 6" male power plug.



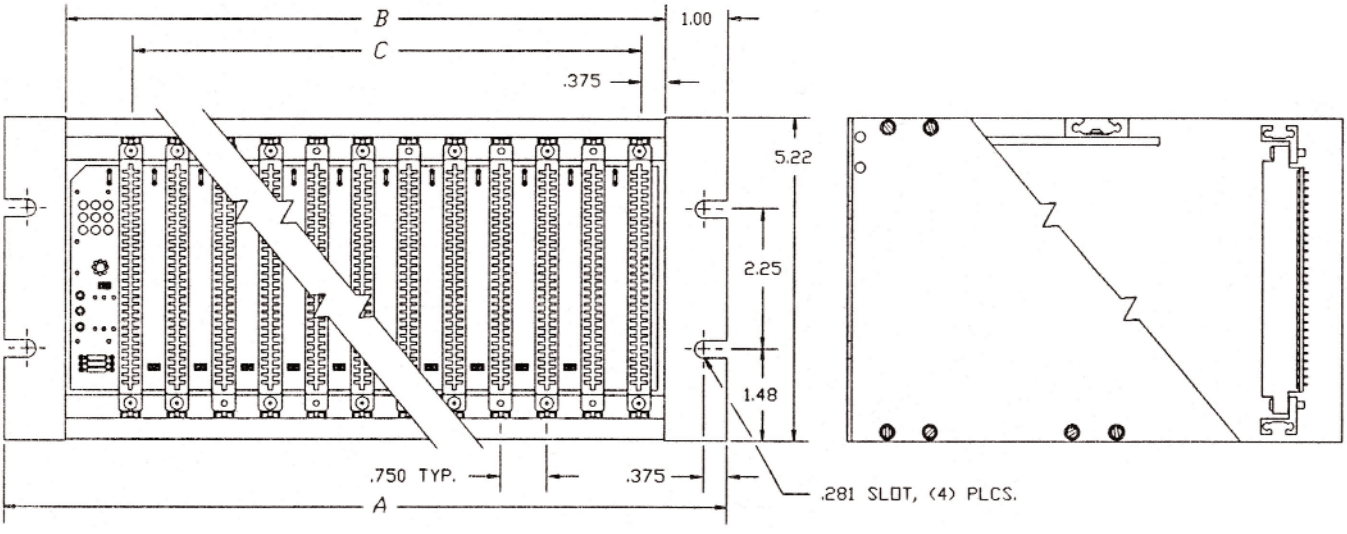
8 Slot Rack Mount Card Cage

The rack mount version uses standard 5.25 inch flanges on all models that allows the card rack to be supported from the front. The table top version allows card racks to be supported by the bottom. The wall mount units are designed to mount to the rear vertical panel of an enclosure.



CARD CAGE
RACK MOUNT

MODEL NO.	NO. SLOTS	*A* DIM.	*B* DIM.	*C* DIM.
CC2-RM	2	4.20	2.20	0,75
CC4-RM	4	5.70	3.70	2.25
CC6-RM	6	7.50	5.50	3.75
CC8-RM	8	9.50	7.50	5.25
CC9-RM	9	9.50	7.50	6.00
CC12-RM	12	11.70	9.70	8.25
CC16-RM	16	19.00	17.00	11.25
CC21-RM	21	19.00	17.00	15.00

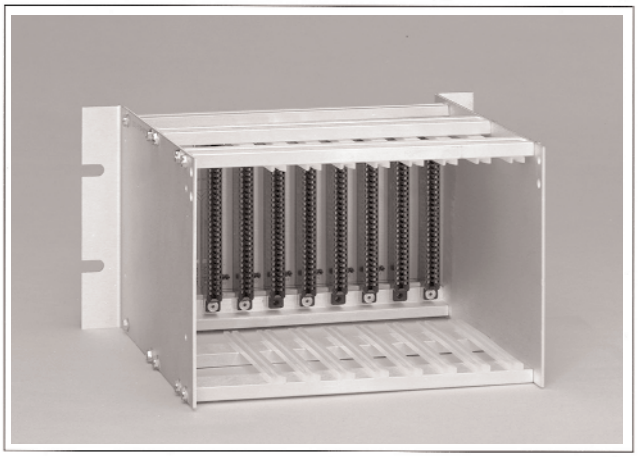


Card Access - All cards are on a 0.75" centers with a vertical orientation to allow maximum convection air circulation.

Termination - Good backplane design involves both an understandaing of high frequency RF, plus good grounding and layout techniques. WinSystems' card cages and motherboards do not require RC passive termination networks and we do not recommend their use. CMOS STD Bus cards should not be used in terminated backplane systems because of the capacitive loading on the bus transceivers.

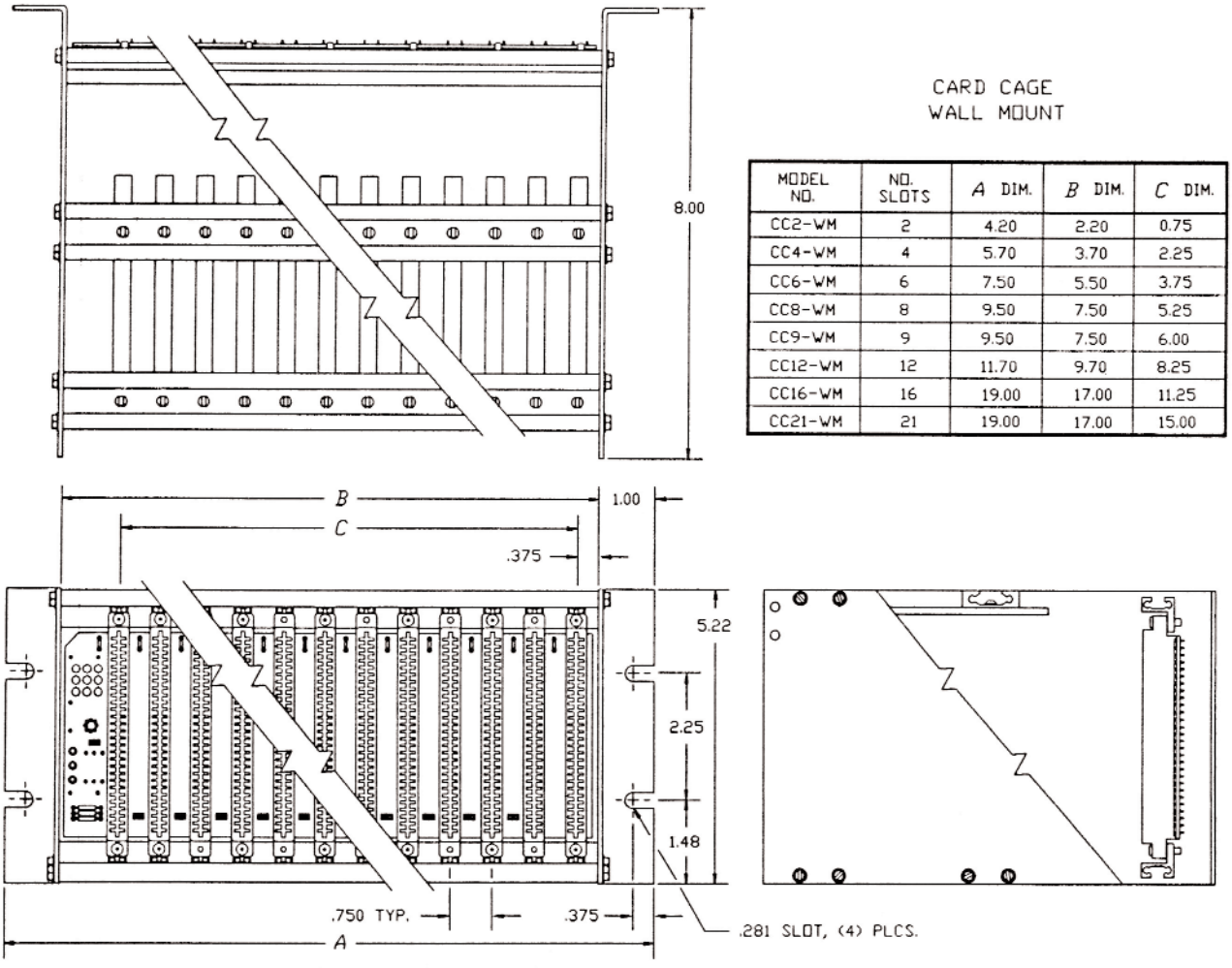
The "termination networks" offered by some vendors are nothing more than RC filters. These filters are not desirable since they introduce 100 pF to 200 pF of unwanted capacitance which will skew the control, address, and data signals. Also, the extra capacitive loading of the termination networks degrade a system's performance.

Multiple Buses - For distributed processing applications, multiple backplanes can be mounted in a single card rack. This allows more than one STD Bus controller to reside in a single enclosure. Call WinSystems for exact configurations and specifications.



8 Slot Wall Mount Card Cage

Hold down bar - An optional latching bar is available to provide additional card restraint. It consists of a 1/4 inch square bar with pins in each end. One of the pins is spring loaded to allow the bar to be installed



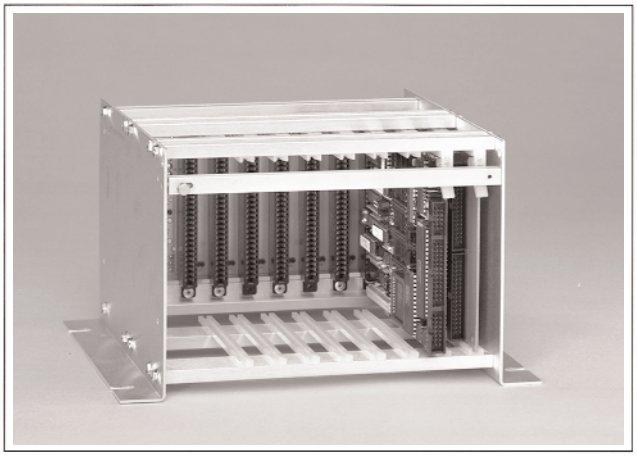
CARD CAGE
WALL MOUNT

MODEL NO.	NO. SLOTS	A DIM.	B DIM.	C DIM.
CC2-WM	2	4.20	2.20	0.75
CC4-WM	4	5.70	3.70	2.25
CC6-WM	6	7.50	5.50	3.75
CC8-WM	8	9.50	7.50	5.25
CC9-WM	9	9.50	7.50	6.00
CC12-WM	12	11.70	9.70	8.25
CC16-WM	16	19.00	17.00	11.25
CC21-WM	21	19.00	17.00	15.00

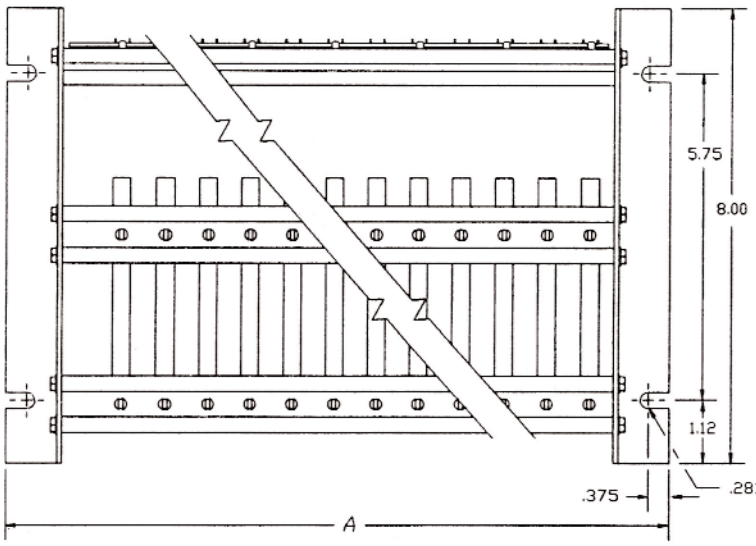
or removed. A knurled finger screw provides a method to securely lock the bar in place. It fastens at both ends of the card cage and then horizontally across the STD Bus card's ejector to hold the cards firmly in the card cage.

Pin-and-Socket Connectors - WinSystems will optionally supply MIL-C-55302/58 type polarized connectors on the backplane instead of card edge connectors for the XIM Series' STD Bus product line. This permits the card cages and backplanes to be used with STD Bus cards that use the pin-and-socket interconnect system. These connectors are superior to DIN-type connectors yet are compatible with WinSystems' XIM series' STD Bus cards. Contact the factory for more information.

19" Rack Mounting - WinSystems' rack mount card cage width varies directly as a function of the number of slots in the backplane. If you desire a rack mount card cage that will fit into a 19" rack regardless of the size of the backplane, then specify Option 4 to fix the "A" dimension at 19 inches. For example, the CC4-RM with Option 4, has a dimension of 5.22" x 19" x 8" rather than 5.22" x 5.7" x 8". The backplane will be left justified within the card cage. Option 4 is valid for rack mount card cages both with and without power supplies.

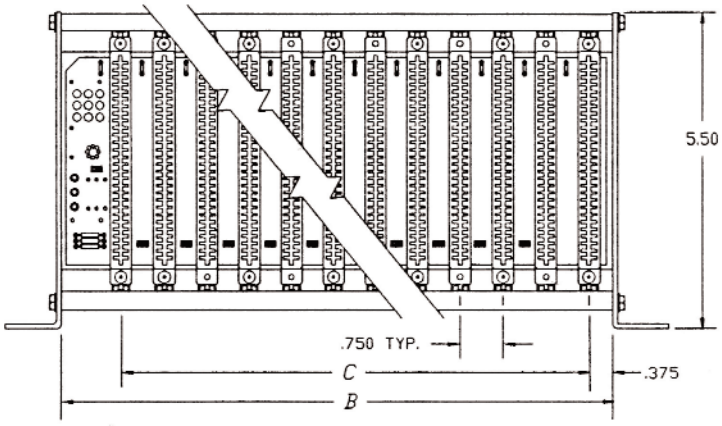


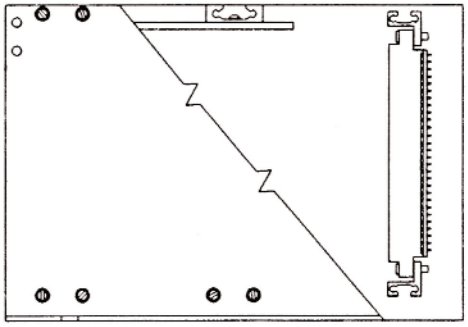
8 Slot Side Entry Card Cage



CARD CAGE
SIDE ENTRY

MODEL NO.	NO. SLOTS	A DIM.	B DIM.	C DIM.
CC2-SE	2	4.20	2.20	0.75
CC4-SE	4	5.70	3.70	2.25
CC6-SE	6	7.50	5.50	3.75
CC8-SE	8	9.50	7.50	5.25
CC9-SE	9	9.50	7.50	6.00
CC12-SE	12	11.70	9.70	8.25
CC16-SE	16	19.00	17.00	11.25
CC21-SE	21	19.00	17.00	15.00





ORDERING INFORMATION

Model	Slots	Mounting Style	Powerfail
CC2-RM	2	Rack Mount	No
CC2-RP	2	Rack Mount	Yes
CC2-SE	2	Table Mount	No
CC2-SP	2	Table Mount	Yes
CC2-WM	2	Wall Mount	No
CC2-WP	2	Wall Mount	Yes
CC4-RM	4	Rack Mount	No
CC4-RP	4	Rack Mount	Yes
CC4-SE	4	Table Mount	No
CC4-SP	4	Table Mount	Yes
CC4-WM	4	Wall Mount	No
CC4-WP	4	Wall Mount	Yes
CC6-RM	6	Rack Mount	No
CC6-RP	6	Rack Mount	Yes
CC6-SE	6	Table Mount	No
CC6-SP	6	Table Mount	Yes
CC6-WM	6	Wall Mount	No
CC6-WP	6	Wall Mount	Yes
CC8-RM	8	Rack Mount	No
CC8-RP	8	Rack Mount	Yes
CC8-SE	8	Table Mount	No
CC8-SP	8	Table Mount	Yes
CC8-WM	8	Wall Mount	No
CC8-WP	8	Wall Mount	Yes
CC9-RM	9	Rack Mount	No
CC9-RP	9	Rack Mount	Yes
CC9-SE	9	Table Mount	No
CC9-SP	9	Table Mount	Yes
CC9-WM	9	Wall Mount	No
CC9-WP	9	Wall Mount	Yes
CC12-RM	12	Rack Mount	No
CC12-RP	12	Rack Mount	Yes
CC12-SE	12	Table Mount	No
CC12-SP	12	Table Mount	Yes
CC12-WM	12	Wall Mount	No
CC12-WP	12	Wall Mount	Yes
CC16-RM	16	Rack Mount	No
CC16-RP	16	Rack Mount	Yes
CC16-SE	16	Table Mount	No
CC16-SP	16	Table Mount	Yes
CC16-WM	16	Wall Mount	No
CC16-WP	16	Wall Mount	Yes
CC21-RM	21	Rack Mount	No
CC21-RP	21	Rack Mount	Yes
CC21-SE	21	Table Mount	No
CC21-SP	21	Table Mount	Yes
CC21-WM	21	Wall Mount	No
CC21-WP	21	Wall Mount	Yes

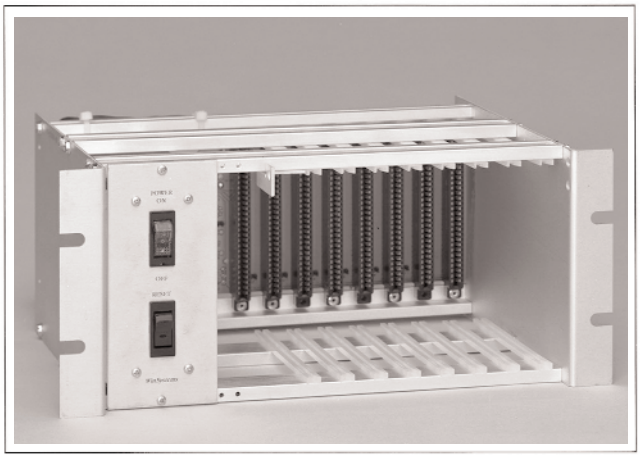
HDB-4	4-Slot Hold Down Bar
HDB-6	6-Slot Hold Down Bar
HDB-8	8-Slot Hold Down Bar
HDB-12	12-Slot Hold Down Bar
HDB-16/21	16/21-Slot Hold Down Bar

POWERED RACKS

Power Supplies - WinSystems offers card cages with 50W and 100W power supplies. These are triple output supplies that mount inside the card cage and generate DC output voltages from the AC mains. These are high efficiency, highly reliable switching power supplies. An ON/OFF switch and momentary Reset switch are mounted on a panel for operator convenience. All units are fused and are equipped with a US standard 3-prong power cord with plug.

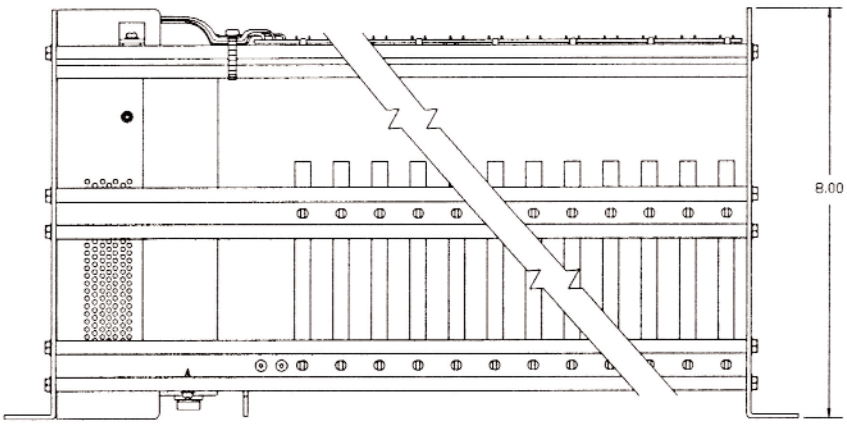
All powered card cages are supplied with a WinSystems' high performance motherboard and status LEDs.

Card Rack Mounting Configuration - Three mounting configurations are available for the card cages with power supplies: Rack mount (RM), Table mount with side entry (SE), and Wall mount (WM). The dimensions are longer for the powered racks to accomodate for mounting the power supplies inside the racks. For this reason, a 21 slot card cage configuration with power supply cannot be manufactured and stay within the 19" length. Contact the factory if you would like a special configuration with the power supply on the back of the rack.



8 Slot Rack Mount Card Cage with 50W Supply

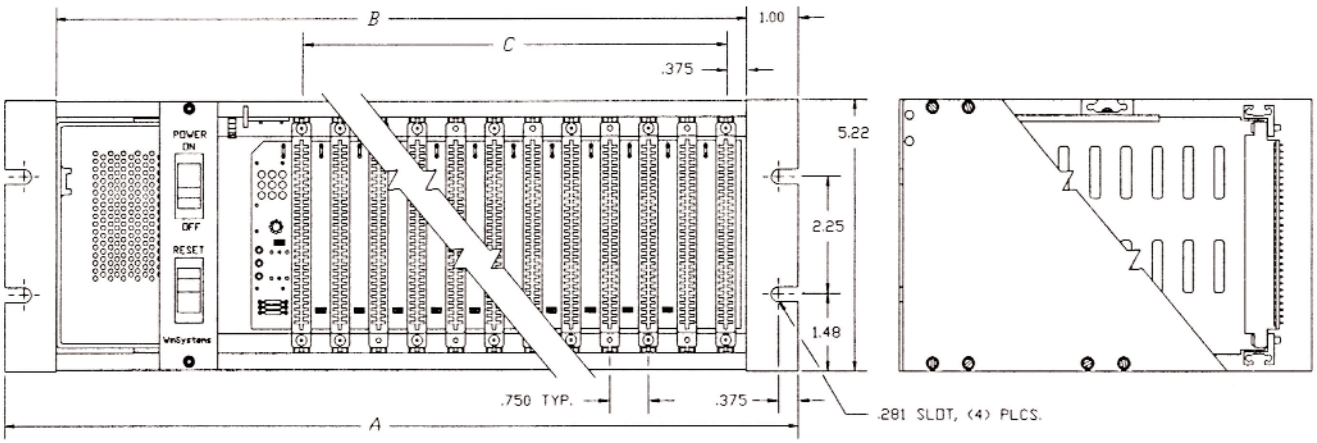
50 Watt Supply - The PS50 is a triple output, 50 Watt power supply. It is designed for CMOS STD Bus or small systems configurations. Although it has a standard 3 prong AC cable, it is a universal input switching design. Universal input voltage eliminates the need for an external 115/220 VAC system switch thereby eliminating failures due to improper input voltage. It will operate from 47 Hz to 440 Hz.



CARD CAGE
RACK MOUNT W/POWER SUPPLY

MODEL NO.	NO. SLOTS	*A* DIM.	*B* DIM.	*C* DIM.
CC2-RM-PSXX	2	7.90	5.90	0.75
CC4-RM-PSXX	4	9.40	7.40	2.25
CC6-RM-PSXX	6	11.20	9.20	3.75
CC8-RM-PSXX	8	12.25	10.25	5.25
CC12-RM-PSXX	12	15.40	13.40	8.25
CC16-RM-PSXX	16	19.00	17.00	11.25

PSXX PS50 - 50 WATT POWER SUPPLY
PS100 - 100 WATT POWER SUPPLY



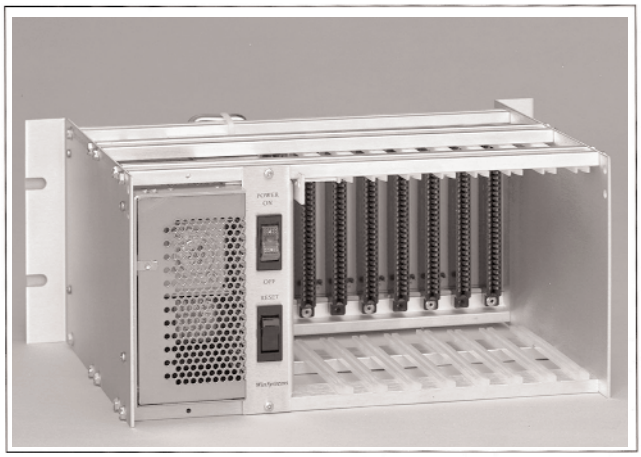
The PS50 is a zero current switcher. It will maintain regulation on all the output voltages down to zero current thus eliminating the need for load resistors at light loads. This makes it ideal for CMOS applications yet there is enough current available for a small DOS system.

The PS50 has overvoltage protection and output short circuit protection. The power supply is convection cooled and should be derated from 50° to 70°C to 25W. The power supply is very reliable with a MTBF of 160,000 hours.

PS50 OUTPUT CHARACTERISTICS

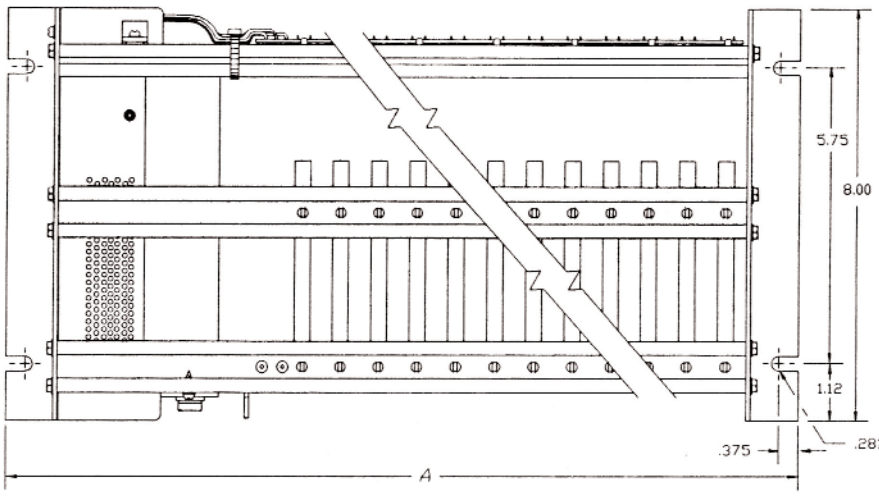
Voltage	Minimum	Maximum
+5	0A	5.0A
+12	0A	2.0A
-12	0A	0.5A

100 Watt power supply - The PS100 is a triple output, high efficiency, 100 Watt power supply. It is designed for medium to large systems configurations. It is a universal input voltage switcher that accepts 85VAC to 264VAC and will work from 47Hz to 63Hz.



8 Slot Wall Mount Card Cage with 100W Power Supply

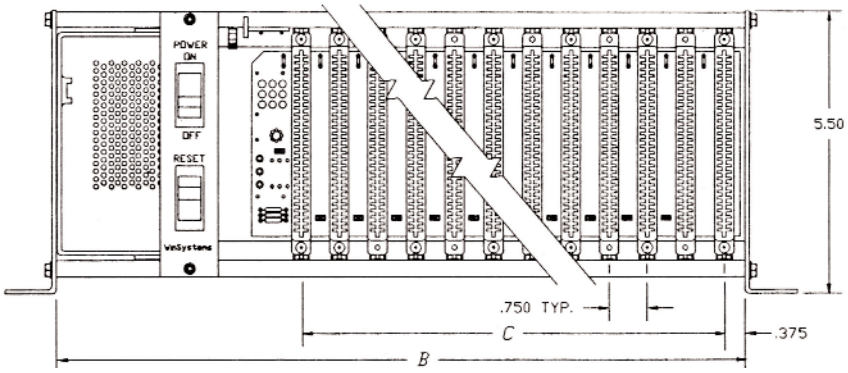
The PS100 is a zero current switching power supply that requires no minimum load to maintain regulation on all output voltages lines. It has both overvoltage protection and output short circuit protection.

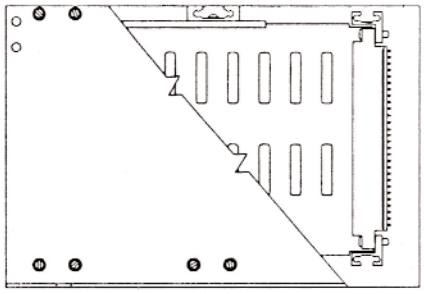


CARD CAGE
SIDE ENTRY W/POWER SUPPLY

MODEL NO.	NO. SLOTS	A DIM.	B DIM	C DIM
CC2-SE-PSXX	2	7.90	5.90	0.75
CC4-SE-PSXX	4	9.40	7.40	2.25
CC6-SE-PSXX	6	11.20	9.20	3.75
CC8-SE-PSXX	8	12.25	10.25	5.25
CC12-SE-PSXX	12	15.40	13.40	8.25
CC16-SE-PSXX	16	19.00	17.00	11.25

PSXX PS50 - 50 WATT POWER SUPPLY
PS100 - 100 WATT POWER SUPPLY





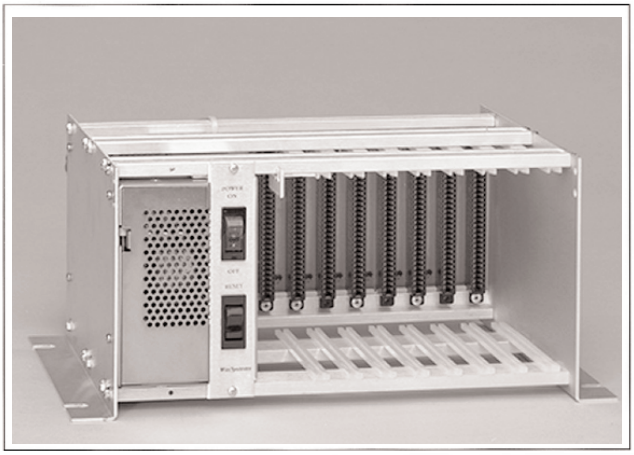
PS100 OUTPUT CHARACTERISTICS

Voltage	Minimum	Maximum
+5	0A	10.0A
+12	0A	3.0A
-12	0A	0.5A

Dimension - The same amount of room is allocated for the power supply for both 50W and 100W power ranges. Therefore the mechanical drawings for the Rack Mount, Wall Mount, and Side Entry reflect no additional room required. The difference is that with the 50W supply, the ON/OFF switch and Reset switch is integral in the power enclosure. The 100W model has an enclosed bracket with the ON/OFF and Reset switch mounted there.

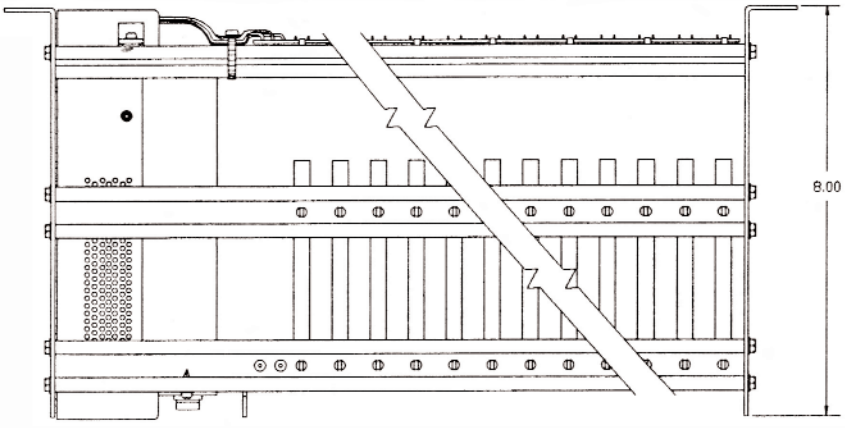
Part Number Assignment - A suffix is added to the standard card cage model number to designate the specific model power supply integrated into the rack.

A PS50 suffix denotes the 50W power supply and a PS100 denotes a 100W power supply. For example a CC8-WM-PS50 designates a 8 slot wall mount card cage with the 50 Watt power supply installed.



8 Slot Side Entry Card Cage with 100W Supply

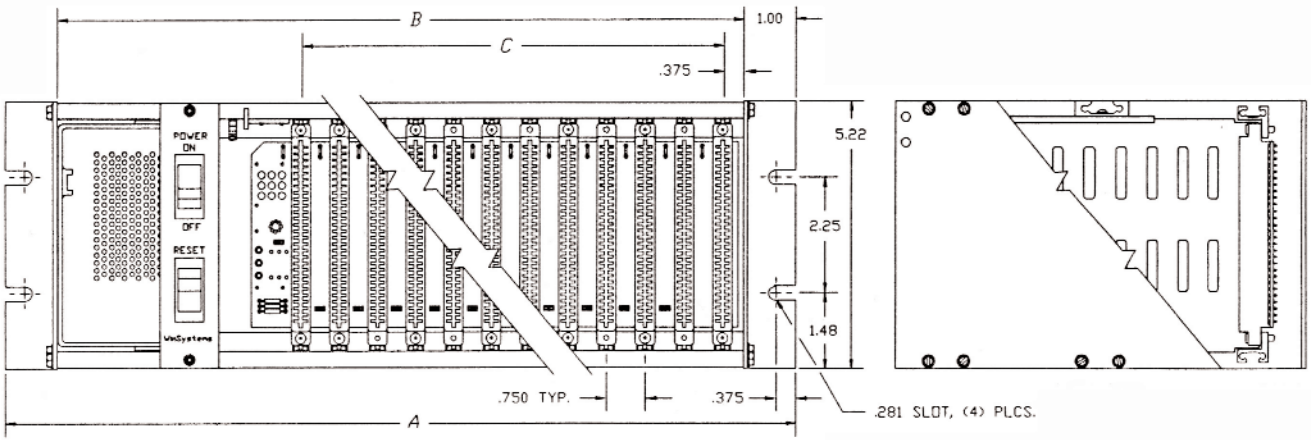
Options - Two options are available for the powered card racks. Option 1 consists of installing three transorbs and Option 4 specifies the rack width at 19″.



CARD CAGE
WALL MOUNT W/POWER SUPPLY

MODEL NO.	NO. SLOTS	A DIM.	B DIM.	C DIM.
CC2-WM-PSXX	2	7.90	5.90	0.75
CC4-WM-PSXX	4	9.40	7.40	2.25
CC6-WM-PSXX	6	11.20	9.20	3.75
CC8-WM-PSXX	8	12.25	10.25	5.25
CC12-WM-PSXX	12	15.40	13.40	8.25
CC16-WM-PSXX	16	19.00	17.00	11.25

PSXX PS50 - 50 WATT POWER SUPPLY
PS100 - 100 WATT POWER SUPPLY



ORDERING INFORMATION

Model	Slots	Mounting Style	Power Supply
CC2-RM-PS50	2	Rack Mount	50W
CC2-SE-PS50	2	Table Mount	50W
CC2-WM-PS50	2	Wall Mount	50W
CC4-RM-PS50	4	Rack Mount	50W
CC4-SE-PS50	4	Table Mount	50W
CC4-WM-PS50	4	Wall Mount	50W
CC6-RM-PS50	6	Rack Mount	50W
CC6-SE-PS50	6	Table Mount	50W
CC6-WM-PS50	6	Wall Mount	50W
CC8-RM-PS50	8	Rack Mount	50W
CC8-RM-PS100	8	Rack Mount	100W
CC8-SE-PS50	8	Table Mount	50W
CC8-SE-PS100	8	Table Mount	100W
CC8-WM-PS50	8	Wall Mount	50W
CC8-WM-PS100	8	Wall Mount	100W
CC12-RM-PS50	12	Rack Mount	50W
CC12-RM-PS100	12	Rack Mount	100W
CC12-SE-PS50	12	Table Mount	50W
CC12-SE-PS100	12	Table Mount	100W
CC12-WM-PS50	12	Wall Mount	50W
CC12-WM-PS100	12	Wall Mount	100W
CC16-RM-PS50	16	Rack Mount	50W
CC16-RM-PS100	16	Rack Mount	100W
CC16-SE-PS50	16	Table Mount	50W
CC16-SE-PS100	16	Table Mount	100W
CC16-WM-PS50	16	Wall Mount	50W
CC16-WM-PS100	16	Wall Mount	100W
CC21-RM-PS100	21	Rack Mount	100W
CC21-SE-PS100	21	Table Mount	100W
CC21-WM-PS100	21	Wall Mount	100W

Motherboard and Card Cage Quick Reference

SLOTS	MOTHERBOARDS Only	RACK MOUNT		WALL MOUNT		SIDE ENTRY	
		With Power Supply	Without Power Supply	With Power Supply	Without Power Supply	With Power Supply	Without Power Supply
2	MB2	CC2-RM-PS50	CC2-RM CC2-RP	CC2-WM-PS50	CC2-WM CC2-WP	CC2-SE-PS50	CC2-SE CC2-SP
4	MB4	CC4-RM-PS50	CC4-RM CC4-RP	CC4-WM-PS50	CC4-WM CC4-WP	CC4-SE-PS50	CC4-SE CC4-SP
6	MB6	CC6-RM-PS50 CC6-RM-PS100	CC6-RM CC6-RP	CC6-WM-PS50 CC6-WM-PS100	CC6-WM CC6-WP	CC6-SE-PS50 CC6-SE-PS100	CC6-SE CC6-SP
8	MB8	CC8-RM-PS50 CC8-RM-PS100	CC8-RM CC8-RP	CC8-WM-PS50 CC8-WM-PS100	CC8-WM CC8-WP	CC8-SE-PS50 CC8-SE-PS100	CC8-SE CC8-SP
9	MB9	—	CC9-RM CC9-RP	—	CC9-WM CC9-WP	—	CC9-SE CC9-SP
12	MB12	CC12-RM-PS50 CC12-RM-PS100	CC12-RM CC12-RP	CC12-WM-PS50 CC12-WM-PS100	CC12-WM CC12-WP	CC12-SE-PS50 CC12-SE-PS100	CC12-SE CC12-SP
16	MB16	CC16-RM-PS50	CC16-RM CC16-RP	CC16-WM-PS50	CC16-WM CC16-WP	CC16-SE-PS50	CC16-SE CC16-SP
21	MB21	CC21-RM-PS100	CC21-RM CC21-RP	CC21-WM-PS100	CC21-WM CC21-WP	CC21-SE-PS100	CC21-SE CC21-SP

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