



RM65-7016E AND RM65-7016NE

RM 65 16-SLOT CARD CAGE AND MOTHERBOARD

RM 65 MICROCOMPUTER MODULES

The RM65-7016E 16-Slot Card Cage and RM65-7016NE Motherboard are one of the hardware options available for the RM 65 Microcomputer Module family.

RM 65 Microcomputer Modules products are designed for OEM and end user microcomputer applications requiring state-of-the-art performance, compact size, modular design and low cost. Software for RM 65 systems can be developed in R6500 Assembly Language, PL/65, BASIC and FORTH. Both BASIC and FORTH are available in ROM and can be incorporated into the user's system.

RM 65 modules use a motherboard interconnect concept and accept any card in any slot. The 64-line RM 65 Bus offers memory addressing up to 128K bytes, high immunity to electrical noise and includes growth provisions for user functions. A set of card cages allows a broad variety of packaging options. RM 65 products may also be used with Rockwell AIM 65 and AIM 65/40 Microcomputers for product development and desktop microcomputer applications.

PRODUCT OVERVIEW

The RM65-7016E 16-slot card cage consists of a 16-slot RM 65 Bus compatible motherboard in a card cage. Memory, I/O or special functions may be added to the AIM 65 Microcomputer by use of the 16-slot card cage. When connected to the AIM 65 Master Module through the Adapter/Buffer, the card cage may be mounted over, under, or behind the AIM 65 Master Module in a variety of orientations to meet unique application requirements. The form factor of the 16-slot card cage allows low profile placement in a table top or terminal style enclosure.

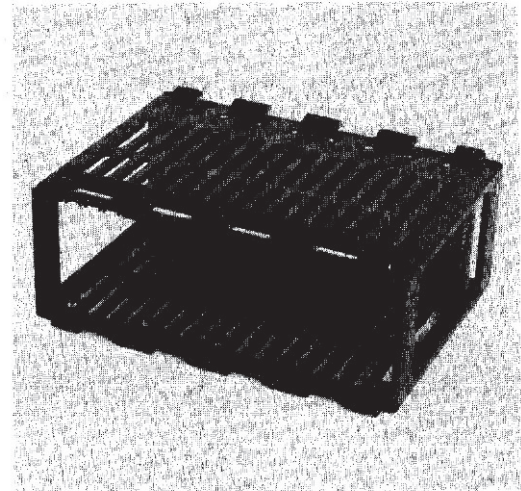
The RM65-7016NE 16-Slot Motherboard is a printed circuit board (PCB) less 16 connectors, two mini-terminal strips, three filter capacitors and 16 mounting blocks used to fasten the PCB to the RM65-7016E card cage. Connectors, mini-terminal strips, filter capacitors, and custom mounting blocks as needed can easily be added to meet unique installation requirements.

FEATURES

- 16-slot card cage with integral module guides
- Rugged, yet lightweight construction
- Screw-down terminals for connecting external power (+5V, +12V/+V, -12V/-V, GND)
- Predrilled holes for various mounting configurations
- Assembled, tested and warranted
- Removable jumpers on motherboard support $\pm 12V$ as well as $\pm V$.

ORDERING INFORMATION

Part No.	Description
RM65-7016E	16-Slot Card Cage
RM65-7016NE	16-Slot Motherboard



RM65-7016E 16-Slot Card Cage

RM 65 Bus Pin Assignments

Bottom (Solder Side)			Top (Component Side)		
Pin	Signal Mnemonic	Signal Name	Pin	Signal Mnemonic	Signal Name
1a	GND	Ground	1c	+5V	+5 Vdc
2a	BADR/	Buffered Bank Address	2c	BA15/	Buffered Address Bit 15
3a	GND	Ground	3c	BA14/	Buffered Address Bit 14
4a	BA13/	Buffered Address Bit 13	4c	BA12/	Buffered Address Bit 12
5a	BA11/	Buffered Address Bit 11	5c	GND	Ground
6a	BA10/	Buffered Address Bit 10	6c	BA9/	Buffered Address Bit 9
7a	BA8/	Buffered Address Bit 8	7c	BA7/	Buffered Address Bit 7
8a	GND	Ground	8c	BA6/	Buffered Address Bit 6
9a	BA5/	Buffered Address Bit 5	9c	BA4/	Buffered Address Bit 4
10a	BA3/	Buffered Address Bit 3	10c	GND	Ground
11a	BA2/	Buffered Address Bit 2	11c	BA1/	Buffered Address Bit 1
12a	BA0/	Buffered Address Bit 0	12c	Bφ1	Buffered Phase 1 Clock
13a	GND	Ground	13c	BSYNC	Buffered Sync
14a	BSO	Buffered Set Overflow	14c	BDRQ1/	Buffered DMA Request 1
15a	BRDY	Buffered Ready	15c	GND	Ground
16a		User Spare 1	16c	-12V/-V	-12 Vdc/-V
17a	+12V/+V	+12 Vdc/+V	17c		User Spare 2
18a	GND	Ground Line	18c	BFLT/	Buffered Bus Float
19a	BDMT/	Buffered DMA Terminate	19c	Bφ0	Buffered External Phase 0 Clock
20a		User Spare 3	20c	GND	Ground
21a	BR/W/	Buffered Read/Write "Not"	21c	BDRQ2/	Buffered DMA Request 2
22a		System Spare	22c	BR/W	Buffered Read/Write
23a	GND	Ground	23c	BACT/	Buffered Bus Active
24a	BIRQ/	Buffered Interrupt Request	24c	BNMI/	Buffered Non-Maskable Interrupt
25a	Bφ2/	Buffered Phase 2 "Not" Clock	25c	GND	Ground
26a	Bφ2	Buffered Phase 2 Clock	26c	BRES/	Buffered Reset
27a	BD7/	Buffered Data Bit 7	27c	BD6/	Buffered Data Bit 6
28a	GND	Ground	28c	BD5/	Buffered Data Bit 5
29a	BD4/	Buffered Data Bit 4	29c	BD3/	Buffered Data Bit 3
30a	BD2/	Buffered Data Bit 2	30c	GND	Ground
31a	BD1/	Buffered Data Bit 1	31c	BD0/	Buffered Data Bit 0
32a	+5V	+5 Vdc	32c	GND	Ground

MOTHERBOARD CONNECTION AND MODULE INSTALLATION

Connect power to TB1 and/or TB2. The power lines should be long enough to allow the card cage to be oriented and positioned as required.

WARNING

The external power supplies must be turned off before connecting to TB1 or TB2.

- a. Connect +5V from an external power supply to either terminal marked "+5". "+5" is connected to all +5V pins on all module receptacles.
- b. Connect GND from the power supply to either terminal marked "G". Both of these terminals are connected to all GND pins on all module receptacles.
- c. Connect +12V/+V from an external power supply to the terminal marked "+V". "+V" is connected to Pin 17a on each module receptacle.

NOTES

- 1. If both +12V and +V (e.g., +15V) are required, remove the soldered jumper corresponding to pin 17a between receptacle 3 and 4 on the soldered side of the motherboard. Connect +12V to TB1 if three or less modules require +12V, or to TB2 if more than three modules require +12V. Connect +V to the other terminal strip.
- 2. If the jumper has been removed and only one voltage is required (i.e., +12V or +V), connect the power lead to both TB1 and TB2.
- d. Connect GND from the +12V/+V power supply to either "G" terminal.
- e. Connect -12V/-V from an external power supply to the terminal marked "-V". "-V" is connected to Pin 16c on each module receptacle.

NOTES

- 1. If both -12V and -V (e.g., -15V) are required, remove the soldered jumper corresponding to pin 16c between

receptacle 3 and 4 on the soldered side of the motherboard. Connect -12V to TB1 if three or less modules require -12V or to TB2 if more than three modules require -12V. Connect -V to the other terminal strip.

- 2. If the jumper has been removed and only one voltage is required (i.e., -12V or -V) connect the power lead to both TB1 and TB2.
- f. Connect GND from the -12V/-V power supply to either "G" terminal.

Install the card cage in the desired position. Mounting holes are provided to allow attachment at the top or bottom of the card cage.

CAUTION

Ensure that neither the left nor right side of the card cage is blocked such that the flow of forced cooling air is impeded.

Install a module in the card cage as follows:

CAUTION

Ensure that power is turned off to the card cage motherboard before installing a module.

- a. Position the module, component side facing TB1 end, in front of the desired card slot.

Card slot No. 1 (slot closest to TB1) has 0.85 inch of component clearance whereas the other seven slots are 0.6 inch centers. If a module is higher than 0.4 inch above the surface of the module, install it in card slot No. 1.

CAUTION

If ±12V and ±V have been connected to different terminal strips (TB1 or TB2), ensure that any modules requiring ±12V or ±V are installed in the slots corresponding to the proper voltage.

- b. Insert the module into the card guide and slide the module straight in until it touches the mating motherboard receptacle.

NOTE

The card slot guides may be snug on the inserted module.

- c. Ensure that the module connector is positioned properly against the mating receptacle.

CAUTION

A key is installed in each edge connector receptacle between pin 5 and pin 6. Forcing an edge connector module without a corresponding slot in the plug may damage the receptacle and/or the module.

- d. Press in firmly on the exposed edge of the module until it is firmly seated.

Remove a module from the card cage as follows:

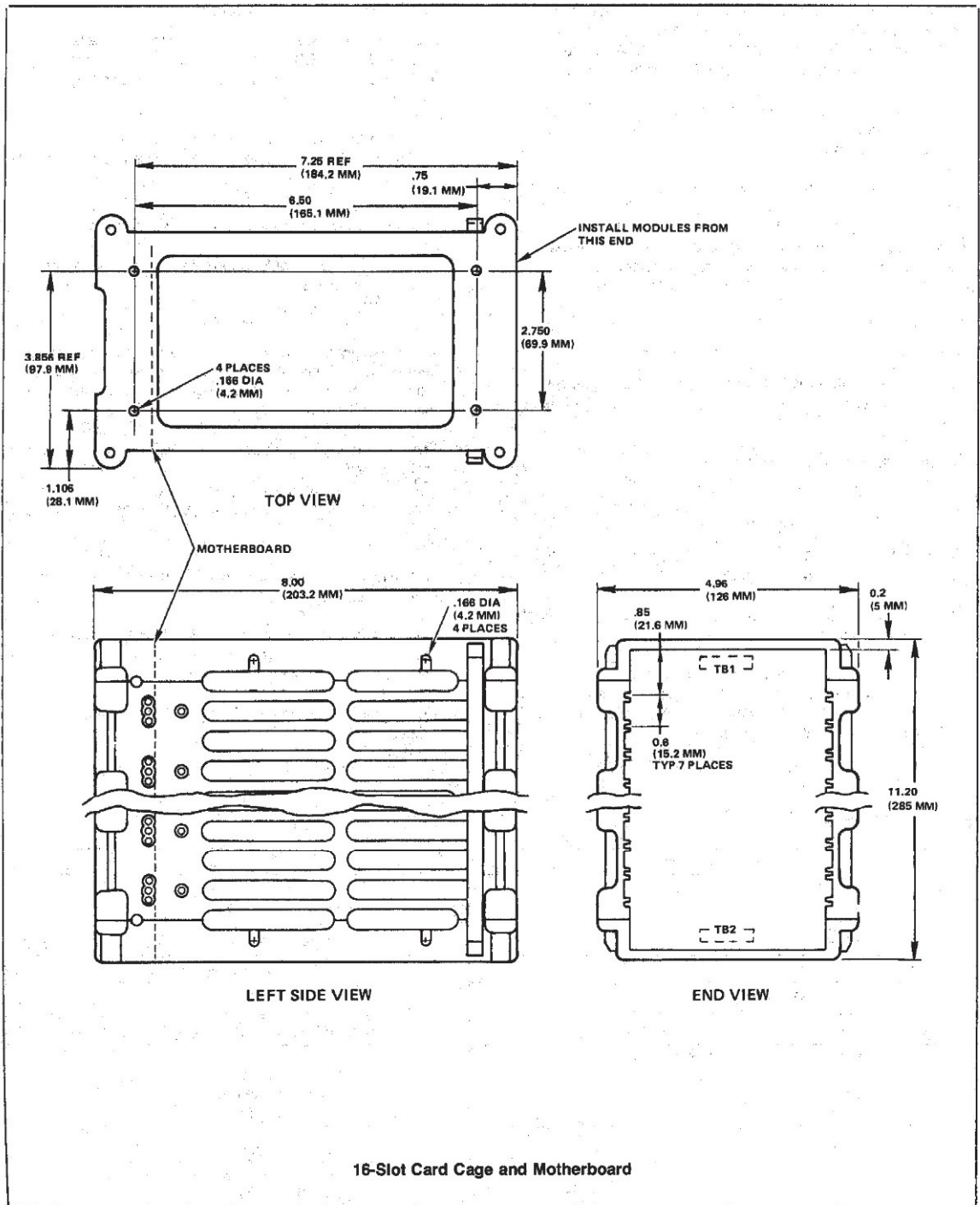
CAUTION

Remove power from the card cage motherboard before removing a module.

- a. Lift up on the module ejector tab, if installed; otherwise grasp the exposed edge of the module and pull, to release the module from the mating receptacle.
- b. Pull the module straight back until it is free from the card slot guides.

SPECIFICATIONS

Characteristic	Value
RM65-7016E Card Cage Dimensions	
Width	4.96 in. (126 mm)
Length	8.00 in. (203 mm)
Height	11.20 in. (285 mm)
Weight	2 lb. 10 oz. (1.20 kg)
Module Separation:	
Slot 1: Centerline to Inside Top Cover	0.85 in. (22 mm)
Other Slots: Centerline to Centerline	0.6 in. (15 mm)
RM65-7016NE Motherboard Dimensions	
Width	3.938 in. (100 mm)
Length	10.525 in. (267 mm)
Height	0.062 in. (1.6 mm)
Hole Size	
Uncoded	0.037 in. (0.940 mm) dia.
A	0.044 in. (1.12 mm) dia.
B	0.128 in. (3.25 mm) dia.



16-CONNECTOR MOTHERBOARD ASSEMBLY

The RM65-7016NE 16-slot motherboard can be assembled as follows:

Install up to 16 module connectors (receptacles) from the front of the PCB. Be sure to observe correct connector orientation.

a. The following connectors or their equivalent, may be used:

Part No.	Manufacturer
P196B32R00K00K9	Burdny Corporation Norwalk, CT 06856
96S-6033-0531-3	Winchester Electronics Oakville, CT 06779
00-8257-096-649-124	Elco Corporation Huntington, PA 16652

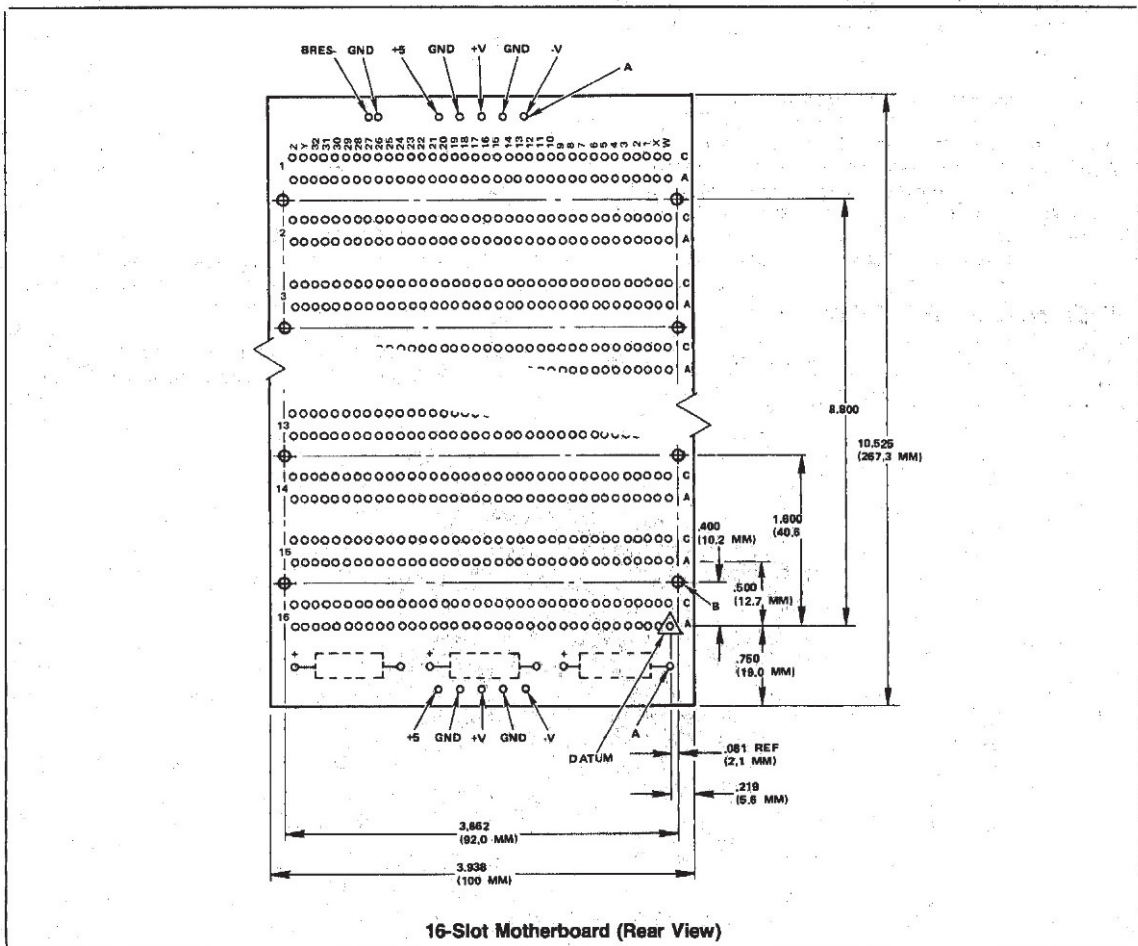
b. Solder the receptacle pin connections to the back of the PCB.

c. Install three 100 ufd, 25 VDC capacitors from +5V to GND, +V to GND, and -V to GND, from the front of the PCB. Be sure to observe correct polarity.

d. Solder the capacitor leads to the back of the PCB.

e. Install one or two mini-terminal strips to the power supply connection holes from the back of the PCB.

f. Solder the mini-terminal strip leads to the front of the PCB.



16-Slot Motherboard (Rear View)