PART NUMBER
RM65-7101(E)

Rockwell

RM 65
DATA SHEET

SINGLE CARD ADAPTER

RM 65

The RM 65 product line is 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.

The RM 65 product line uses a motherboard interconnect concept and accepts 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 selection of card cages provides packaging flexibility. RM 65 products may also be used with Rockwell's AIM 65 Microcomputer for product development and for a broad variety of portable or desktop microcomputer applications.

ORDERING INFORMATION

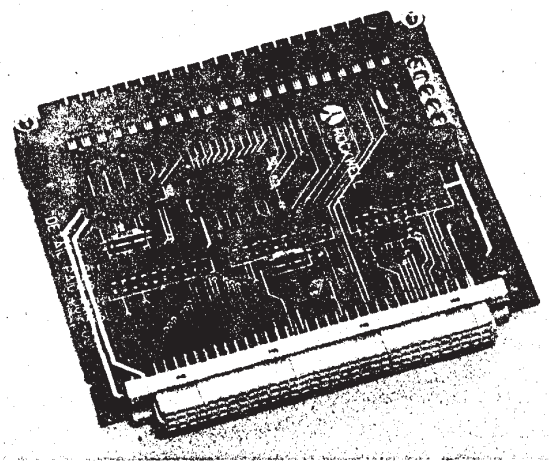
The Single Card Adapter is available in an Edge Connector version (RM65-7101) and a Eurocard version (RM65-7101E).

FEATURES

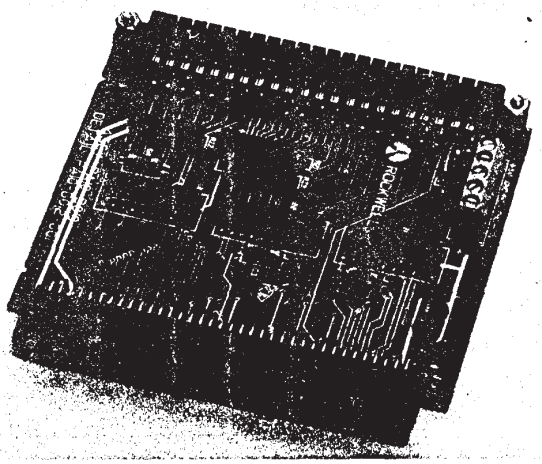
- Drives one RM 65 Bus-compatible module
- Provision for power and ground routing
- Extends address, data and control lines
- Edge connector and Eurocard versions
- Fully assembled, tested and warranted

PRODUCT OVERVIEW

The RM 65 Single-Card Adapter allows one RM 65 Bus compatible module to be connected to the AIM 65 Master Module, through the AIM 65 Expansion connector. The Adapter routes the AIM 65 address, data and control lines from the AIM 65 Expansion connector pin assignments to the RM 65 Bus pin assignments. Drive circuitry is included on the address and data lines.



Eurocard Version
RM65-7101E



Edge Connector Version
RM65-7101

RM65 BOARD PRODUCTS

SINGLE CARD ADAPTER

Specifications subject to change without notice
Document No. RMA65 N03
Rev. 1, March 1981

FUNCTIONAL DESCRIPTION

The Single Card Adapter interfaces AIM 65 Expansion Connector signals to an attached RM 65 Bus receptacle. Data and address lines are buffered, whereas control lines are directly wired. All signals are routed from the AIM 65 Expansion Connector positions to corresponding RM 65 Bus receptacle pin positions. Ground is connected to the interspersed RM 65 Bus GND pins.

The Data Transceivers invert and drive 8-bits of parallel data between the AIM 65 Expansion Connector and the RM 65 Bus interface. During a write operation, data received from the AIM 65 Expansion Connector are driven into the interfacing RM 65 module. During a read operation, data read from the RM 65 module are transmitted into the AIM 65. When the RM 65 module is not addressed, the transceivers are disabled.

The Address Buffers invert and buffer 16 parallel address bits from the AIM 65 to the connected RM 65 module. The bank address line is held high to address Bank 0 (lower 65K) in the interfacing RM 65 module.

Eleven control and timing signals are directly connected between the AIM 65 Expansion Connector and the RM 65 module. The read/write, phase 2 clock, phase 1 clock, sync and reset AIM 65 output lines are routed directly to the RM 65 receptacle. The ready, interrupt request, set overflow and non-maskable interrupt lines from the RM 65 receptacle are connected straight through to the AIM 65 Expansion Connector interface.

A terminal block allows external +5V, +12V/+V, and -12V/-V power supplies to be connected as required. An on-board jumper allows the +5V for the RM 65 module to originate from the AIM 65 Expansion Connector or from the external +5V power supply.

POWER CONNECTION

+5V Power Connection

The +5V required for the Single Card Adapter can be provided from the AIM 65 microcomputer through the AIM 65 Expansion Connector or directly from an external power supply through a connection to the on-board terminal board (TB1). Jumper A/B routes the +5V power from the selected source.

CAUTION

Turn off the external power supply before connecting power leads to the Single Card Adapter.

AIM 65 +5V Power Source Connection

(1) Install Jumper A/B in the A position.

(2) Disconnect the +5V lead of the external power supply from the +5V connection on TB1.

WARNING

If the mating RM 65 module draws over 0.5A, the external connection to +5V must be used or the AIM 65 Master Module may be damaged.

External +5V Power Source Connection

(1) Install Jumper A/B in the B position.

(2) Connect the +5V lead from the external power supply to the +5V connection on TB1.

(3) Connect the ground lead from the external +5V power supply to either of the two GND connections on TB1.

±12V/±V Power Connection

Connection points are provided on TB1 for ±12 Vdc, or other voltages, as required by the mating RM 65 module.

(1) Connect the +12V/+V lead from the external power supply to the TB1 connection marked +15V or +V. This terminal is connected to connector J1 pin 17a.

(2) Connect the -12V/-V lead from the external power supply to the TB1 connection marked -15V or -V. This terminal is connected to connector J1 pin 16c.

INSTALLING THE SINGLE CARD ADAPTER

Before installing the module, ensure that it is not damaged and is free of grease, dirt, liquid or other foreign material.

CAUTION

Prior to module installation, turn off power to the AIM 65 and, if applicable, the optional external +5V and/or ±12V/±V power supply input to the Adapter.

a. Align pin 1 of J3 on the SCA with pin 1 of the Expansion Connector on the AIM 65 Master Module (component side up).

b. Carefully insert the Adapter into the Expansion Connector.

c. Press in firmly until all pins are securely seated.

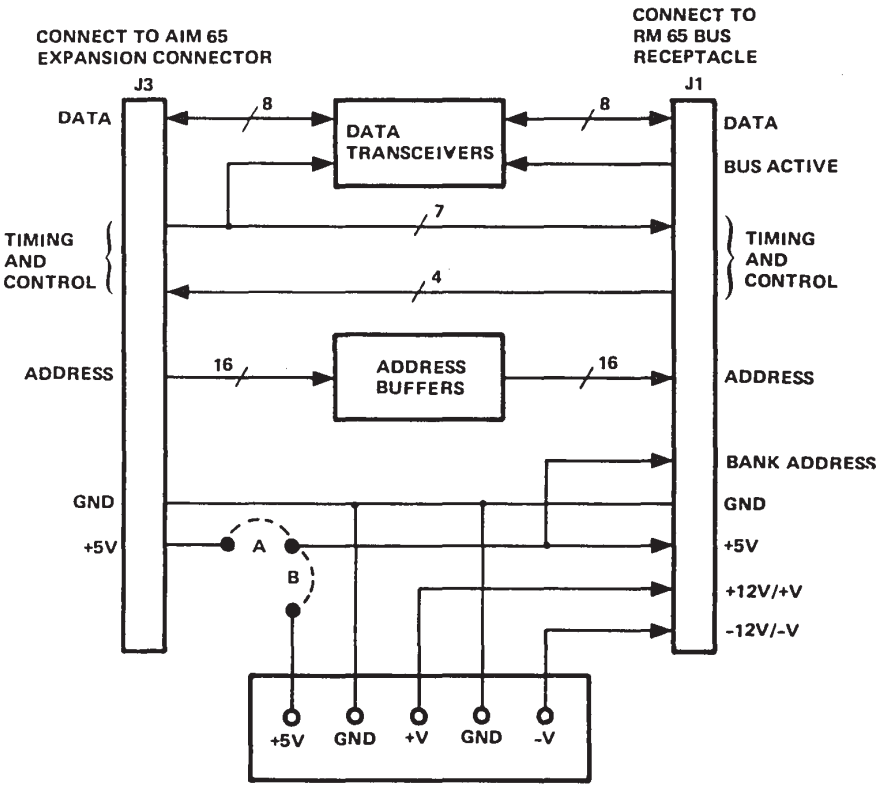
d. Install the RM 65 module into the J1 connector on the Adapter using installation procedures described in the documentation for the particular module. Ensure that Bank Select switches on the add-on module are positioned to Bank Select 0 or Bank Select Disable, as appropriate.

e. Turn on power to the AIM 65 and, if applicable, turn on external +5 Vdc and/or ±12V/±V to the SCA module.

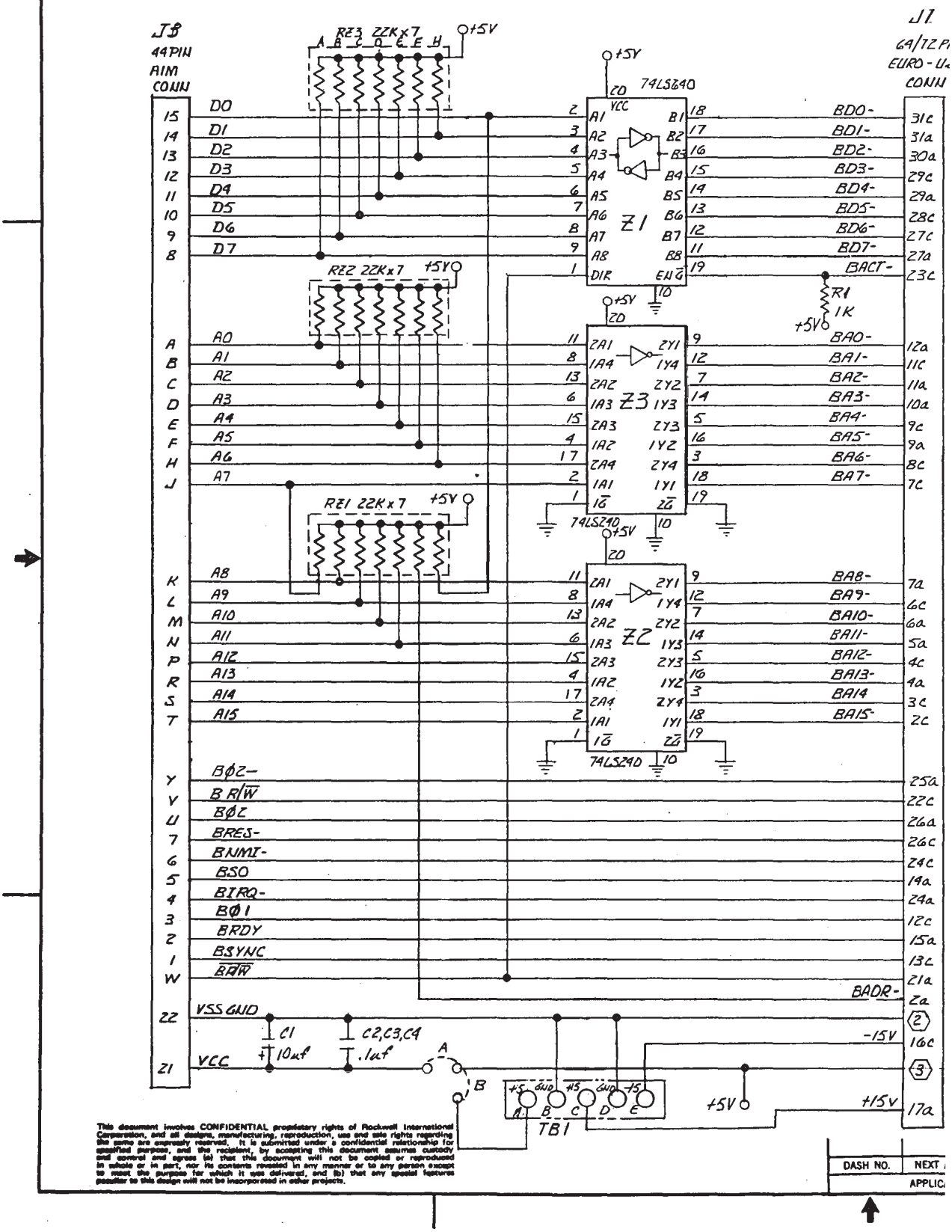
REMOVING THE SINGLE CARD ADAPTER

a. Turn off power to the AIM 65 and if applicable, to the external ±12V/±V power supplies.

b. Pull the Adapter straight back while moving it slightly from side to side to disconnect it from the AIM 65 Expansion Connector.



Single Card Adapter Block Diagram



NC 52280

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

PA10-X011

NOTE: UNLESS OTHERWISE SPECIFIED

1. REF ASSY DWG PA10-D010
2. PINS 1a, 3a, 5c, 8a, 10c, 13a, 15c, 18a, 20c, 23a, 25c, 28a, 30c, 32c SHALL BE CONNECTED TO GROUND.
3. PINS 1c, 32a ON EURO CONNECTOR AND PINS Xa, Xc, Ya, Yc, 1c, 32a ON US. CONNECTOR SHALL BE TIED TO +5V.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON DECIMALS .XX = ± .03 .XXX = ± .010 ANGLES ± 30'

AUTHORIZATION NO.

DR BY FREED 3-3-80
CHK BY
APPD BY
APPD BY

HEAT TREAT
FINISH

PART NO.

ROCKWELL INTERNATIONAL CORPORATION
MICROELECTRONIC DEVICES
3310 MIRALOMA AVE., ANAHEIM, CA 92803

SCHEMATIC - SINGLE CARD ADAPTER

SIZE	CODE IDENT NO.	DRAWING NO.
C	34576	PA10-X011

SCALE | SHEET

183-G-13 Rev. 5-78

RM 65 Bus Pin Assignments

Bottom (Solder Side)				Top (Component Side)			
Signal Mnemonic	Signal Name	Input/ Output	Pin	Pin	Signal Mnemonic	Signal Name	Input/ Output
	Not Connected (See Note)		Wa	Wc		Not Connected (See Note)	
+5V	+5 Vdc Line (See Note)		Xa	Xc	+5V	+5 Vdc (See Note)	
GND	Ground		1a	1c	+5V	+5 Vdc	
BADR/	Buffered Bank Address	O	2a	2c	BA15/	Buffered Address Bit 15	O
GND	Ground		3a	3c	BA14/	Buffered Address Bit 14	O
BA13/	Buffered Address Bit 13	O	4a	4c	BA12/	Buffered Address Bit 12	O
BA11/	Buffered Address Bit 11	O	5a	5c	GND	Ground	
BA10/	Buffered Address Bit 10	O	6a	6c	BA9/	Buffered Address Bit 9	O
BA8/	Buffered Address Bit 8	O	7a	7c	BA7/	Buffered Address Bit 7	O
GND	Ground		8a	8c	BA6/	Buffered Address Bit 6	O
BA5/	Buffered Address Bit 5	O	9a	9c	BA4/	Buffered Address Bit 4	O
BA3/	Buffered Address Bit 3	O	10a	10c	GND	Ground	
BA2/	Buffered Address Bit 2	O	11a	11c	BA1/	Buffered Address Bit 1	O
BA0/	Buffered Address Bit 0	O	12a	12c	BØ1	Buffered Phase 1 Clock	O
GND	Ground		13a	13c	BSYNC	Buffered Sync	O
BSO	Buffered Set Overflow	I	14a	14c	BDRQ1/	*Buffered DMA Request 1	
BRDY	Buffered Ready	I	15a	15c	GND	Ground	
	*User Spare 1		16a	16c	-12V/-V	-12 Vdc/-V	
+12V/+V	+12 Vdc/+V		17a	17c		*User Spare 2	
GND	Ground Line		18a	18c	BFLT/	*Buffered Bus Float	
BDMT/	*Buffered DMA Terminate		19a	19c	BØ0	*Buffered External Phase 0 Clock	
	*User Spare 3		20a	20c	GND	Ground	
BR/$\overline{W}$/	Buffered Read/Write "Not"	O	21a	21c	BDRQ2/	*Buffered DMA Request 2	
	*System Spare		22a	22c	BR/$\overline{W}$	Buffered Read/Write	O
GND	Ground		23a	23c	BACT/	Buffered Bus Active	I
BIRQ/	Buffered Interrupt Request	I	24a	24c	BNMI/	Buffered Non-Maskable Interrupt	I
BØ2/	Buffered Phase 2 "Not" Clock	O	25a	25c	GND	Ground	
BØ2	Buffered Phase 2 Clock	O	26a	26c	BRES/	Buffered Reset	O
BD7/	Buffered Data Bit 7	I/O	27a	27c	BD6/	Buffered Data Bit 6	I/O
GND	Ground		28a	28c	BD5/	Buffered Data Bit 5	I/O
BD4/	Buffered Data Bit 4	I/O	29a	29c	BD3/	Buffered Data Bit 3	I/O
BD2/	Buffered Data Bit 2	I/O	30a	30c	GND	Ground	
BD1/	Buffered Data Bit 1	I/O	31a	31c	BD0/	Buffered Data Bit 0	I/O
+5V	+5 Vdc		32a	32c	GND	Ground	
+5V	+5 Vdc (See Note)		Ya	Yc	+5V	+5 Vdc (See Note)	
	*Not Connected (See Note)		Za	Zc		Not Connected (See Note)	

NOTE
Pins Wa, Wc, Xa, Xc, Ya, Yc, Za, Zc are not used on the Eurocard version.
*Not used on this module.

AIM 65 Expansion Connector Pin Assignments

Top (Component Side)				Bottom (Solder Side)			
Signal Mnemonic	Signal Name	Input/ Output	Pin	Pin	Signal Mnemonic	Signal Name	Input/ Output
SYNC	Sync	I	1	A	A0	Address Bit 0	I
RDY	Ready	O	2	B	A1	Address Bit 1	I
Ø1	Phase 1 Clock	I	3	C	A2	Address Bit 2	I
$\overline{IRQ}$	Interrupt Request	O	4	D	A3	Address Bit 3	I
S.O.	Set Overflow	O	5	E	A4	Address Bit 4	I
$\overline{NMI}$	Non-Maskable Interrupt	O	6	F	A5	Address Bit 5	I
$\overline{RES}$	Reset	I	7	H	A6	Address Bit 6	I
D7	Data Bit 7	I/O	8	J	A7	Address Bit 7	I
D6	Data Bit 6	I/O	9	K	A8	Address Bit 8	I
D5	Data Bit 5	I/O	10	L	A9	Address Bit 9	I
D4	Data Bit 4	I/O	11	M	A10	Address Bit 10	I
D3	Data Bit 3	I/O	12	N	A11	Address Bit 11	I
D2	Data Bit 2	I/O	13	P	A12	Address Bit 12	I
D1	Data Bit 1	I/O	14	R	A13	Address Bit 13	I
D0	Data Bit 0	I/O	15	S	A14	Address Bit 14	I
-12V	*-12 Vdc		16	T	A15	Address Bit 15	I
+12V	*+12 Vdc		17	U	SYS Ø2	System Phase 2 Clock	I
$\overline{CS8}$	*Chip Select 8		18	V	SYS R/$\overline{W}$	System Read/Write	I
$\overline{CS9}$	*Chip Select 9		19	W	R/$\overline{W}$	Read/Write "Not"	I
$\overline{CSA}$	*Chip Select A		20	X	*TEST	Test	
+5V	+5 Vdc		21	Y	$\overline{Ø2}$	Phase 2 Clock "Not"	I
GND	Ground		22	Z	*RAM R/$\overline{W}$	RAM Read/Write	

NOTE:

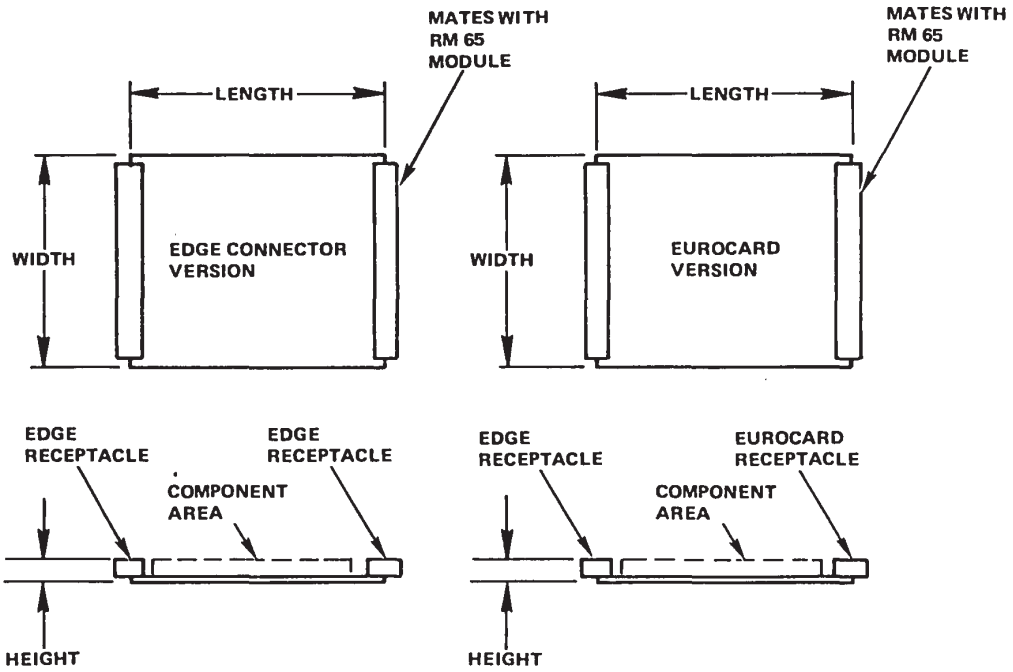
* = Not used on this module.

Single Card Adapter Module Physical and Electrical Characteristics

Characteristic	Value	
Physical Characteristics (See Notes)		
	Edge Connector	Eurocard
Width	4.4 in. (111 mm)	4.4 in. (111 mm)
Length	3.7 in. (93 mm)	3.7 in. (93 mm)
Height	0.56 in. (14 mm)	0.56 in. (14 mm)
Weight	3.2 oz. (95 g)	3.0 oz. (90 g)
Environment		
Operating Temperature	$0^{o}C$ to $70^{o}C$	
Storage Temperature	$-40^{o}C$ to $85^{o}C$	
Relative Humidity	0% to 85% (without condensation)	
Power Requirements	+5V ±5% 110 mA (0.55W) — Typical 200 mA (1.00W) — Maximum	
Interface		
AIM 65 Expansion Connector	22/44 — edge receptacle (0.156 in. centers)	
RM 65 Bus		
Edge Connector Version	72-pin edge receptacle (0.100 in. centers)	
Eurocard Version	64-pin receptacle (0.100 in. centers) per DIN 41612 (Row b is not installed)	

NOTES:

1. The height includes the maximum values for component height above the board surface (0.4 in. for populated modules), printed circuit board thickness (0.062 in.), and pin extension through the bottom of the module (0.1 in.).
2. The length does not include extensions beyond the edge of the module due to connectors.



Module Dimensions