



**RM65-7116E
RM 65 CABLE DRIVER
ADAPTER/BUFFER FOR AIM 65**

RM 65 MICROCOMPUTER MODULES

The RM65-7116E Cable Driver Adapter/Buffer is one of the hardware options available for the RM 65 Microcomputer Module family.

RM 65 Microcomputer Module 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 module products 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 selection of card cages provides packaging flexibility. RM 65 products may also be used with Rockwell AIM 65 Microcomputer for product development and for a broad variety of portable or desktop microcomputer applications.

ORDERING INFORMATION

Part No.	Description
RM65-7116E	Cable Driver Adapter Buffer for AIM 65

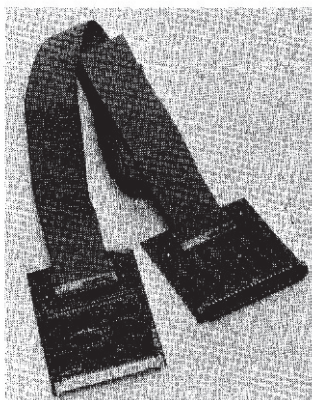
FEATURES

- RM 65 Bus compatible
- Buffered address data and control lines
- Drives up to 15 modules
- Long cable for distances of up to 6 feet
- Fully assembled, tested and warranted

PRODUCT OVERVIEW

The RM65-7116E Cable Driver Adapter/Buffer extends the AIM 65 Expansion Bus from the AIM 65 Expansion Connector to an RM 65 Bus motherboard that is situated up to six feet away. Included circuitry permits the Cable Driver Adapter/Buffer to drive up to 15 RM 65 Bus-compatible modules. (The similar Adapter/Buffer, Part Number RM65-7104, provides the same drive capability for applications in which the motherboard need not be more than 16 inches from the Expansion Connector.)

The Cable Driver Adapter/Buffer consists of a cable driver adapter module, a buffer module and two 6-foot interconnect cables. Both cables are flexible, so the motherboard may be installed in a wide variety of locations and orientations relative to the AIM 65.



RM65-7116E Cable Driver Adapter/Buffer for AIM 65

FUNCTIONAL DESCRIPTION

The Cable Driver Adapter/Buffer consists of two modules and two interconnect cables. The Adapter Module connects to the AIM 65 Expansion connector and the Buffer module connects to an RM 65 Bus motherboard receptacle.

The Cable Driver Adapter module buffers data, address and control lines between the AIM 65 Expansion Connector and the interconnect cables.

The Data Transceivers drive 8-bits of parallel data. During a write operation, data received from the AIM 65 are driven onto the cables. During a read operation, data received from the cables are driven into the AIM 65. The bus active signal enables the Data Transceivers.

The Address Buffers drive 16-bits of parallel data from the AIM 65 onto the cables.

The Control Buffers transfer the timing and control signals between the AIM 65 and the cables. The seven read/write, clock, sync, and reset lines are driven from the AIM 65 onto the cables. The four ready, set overflow, interrupt request and non-maskable interrupt lines are driven from the cables onto the AIM 65.

Two 6-foot 40 conductor flat ribbon cables connect the Cable Driver Adapter module to the Buffer module. The cables are mass terminated at each end, and are permanently attached to the interfacing module.

The Buffer module buffers and routes all interface signals between the interconnect cables and the RM 65 Bus connector.

The Data Transceivers invert and drive 8-bits of parallel data. During a write operation, data received from the cables are driven onto the RM 65 Bus. During a read operation, data received from the RM 65 Bus are driven onto the cables. The bus active signal enables the Transceivers. When the bus float signal is active, the Transceivers are disabled.

The Address Buffers invert and transfer 16 parallel address lines from the interconnect cable to the RM 65 Bus. When the bus float signal is active, the Buffers are disabled.

Jumper E1 selects the source for the bank address line (BADP/)—either the buffer module or an external module. When the buffer module is the source (position A), the bank address line is held high to address Bank 0 (lower 65K) on the Bus; this line is disabled when the bus float line is active. For an external source (position B), the bank address line is not used by the buffer module, and must be controlled by another module on the Bus.

The seven read/write, clock, sync and reset lines from the cables to the bus are buffered by the Control Buffers. All of these lines, except reset and phase 1, are disabled when the

bus float line is active. The ready, set overflow, interrupt request and non-maskable lines from the bus to the interconnect cables are also buffered by the Control Buffers.

Jumper E2 selects the source for the DMA Terminate line (BDMT/)—either the buffer module or an external module. When the buffer module is the source (position A), the DMA terminate line is held high (inactive). For an external source (position B), the DMA terminate line is not used by the buffer module, and must be controlled by another module on the bus.

INSTALLATION/REMOVAL**CABLE DRIVER ADAPTER/BUFFER INSTALLATION****CAUTION**

RM 65 Bus connectors are keyed to prevent improper module connection. If the module does not insert into the receptacle with moderate pressure applied, check the orientation and connector alignment of the module. Forcing the module improperly into the receptacle may damage the receptacle and/or the module.

- a. Before installing the Cable Driver Adapter/Buffer, turn off power to the AIM 65 and the interfacing RM 65 Bus motherboard.
- b. Configure Jumpers E1 and E2, per the Functional Description.
- c. Align Cable Driver Adapter module connector J3 pin 1 with the AIM 65 Expansion Connector J3 pin 1.
- d. Plug the Cable Driver Adapter module onto the Expansion Connector. Press in firmly on the end of module until all pins are securely seated.
- e. Install connector P1 of the Buffer module into the desired slot on the mating RM 65 Bus motherboard.
- f. Apply power to the AIM 65 and to the mating RM 65 Bus motherboard.

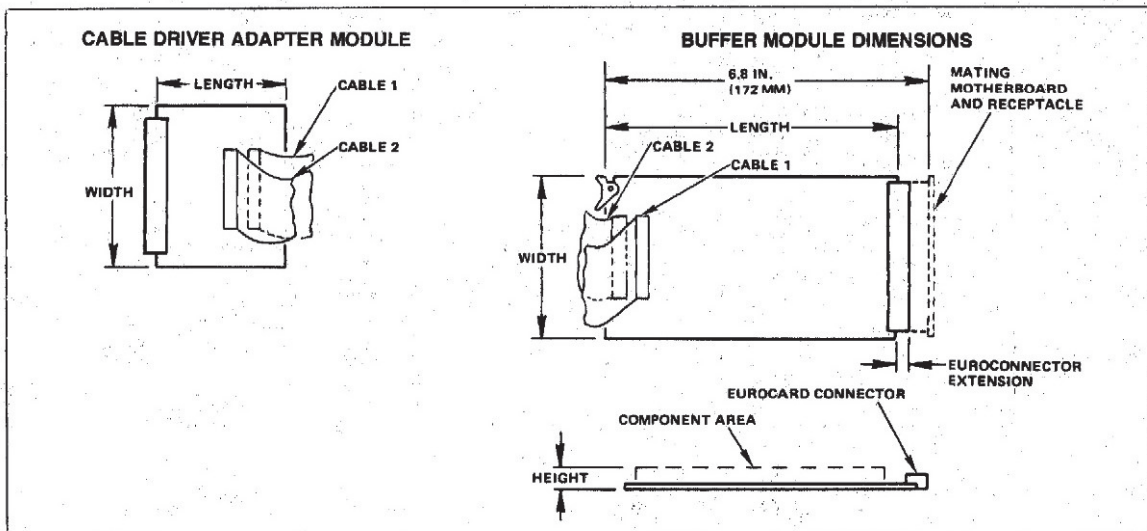
CABLE DRIVER/ADAPTER/BUFFER REMOVAL

- a. Turn off power to the AIM 65 and to the RM 65 Bus motherboard.
- b. Lift up on the Buffer module ejector tab to release the module from the mating RM 65 Bus receptacle. Pull the module straight back until it is free from the card slot guides.
- c. Pull back on the Cable Driver module while moving it slightly from side to side until it is free from the AIM 65 Expansion Connector.

Buffer Module to RM 65 Bus Connector Pin Assignments

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

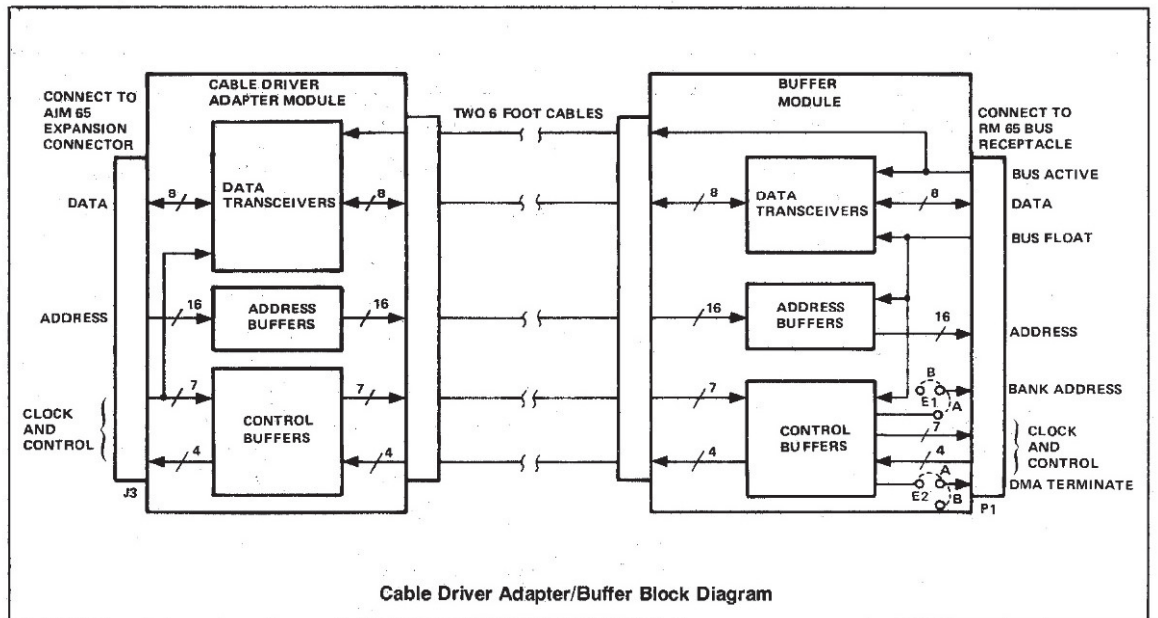
Note:
*Not used on this module.



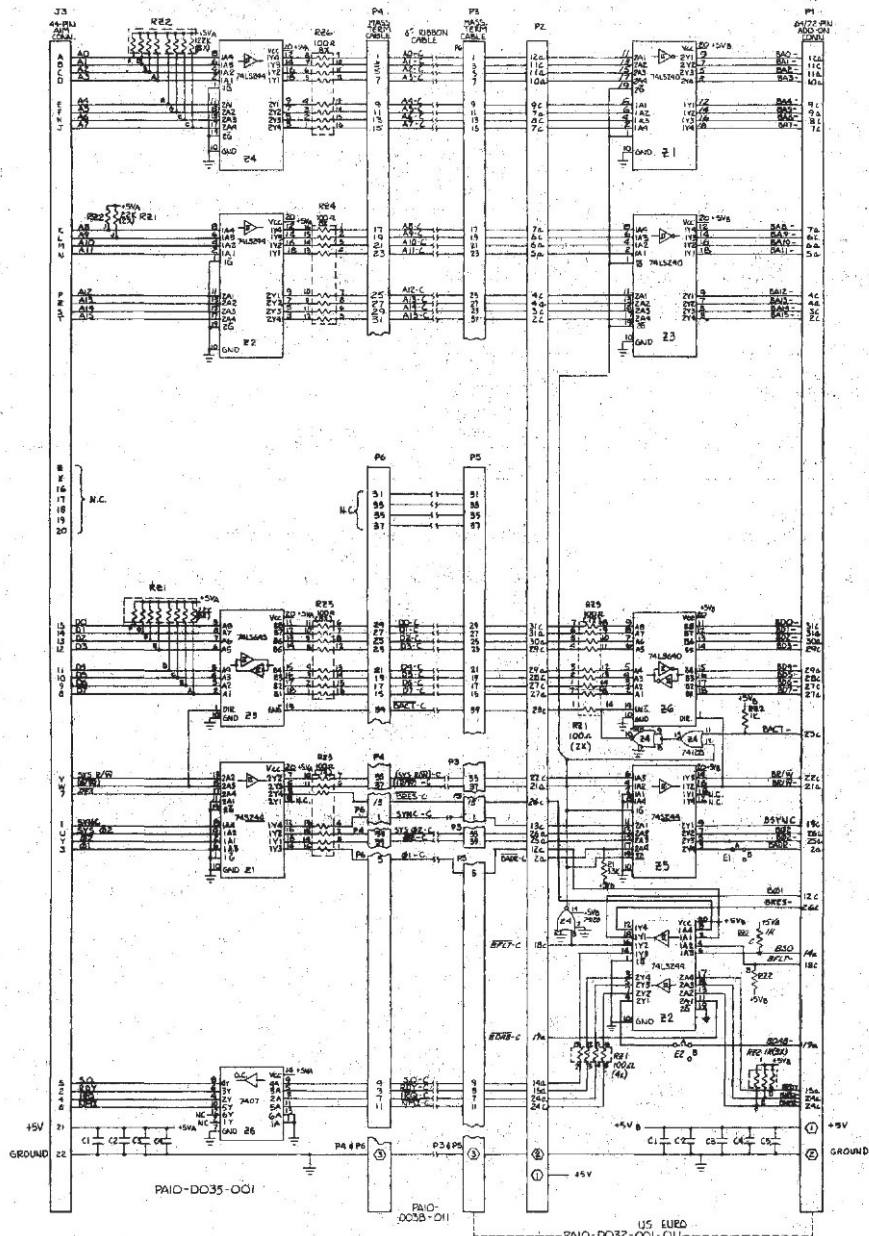
Cable Driver Adapter Module to AIM 65 Expansion Connector Pin Assignments

Top (Component Side)				Bottom (Solder Side)			
Pin	Signal Mnemonic	Signal Name	Input/Output	Pin	Signal Mnemonic	Signal Name	Input/Output
1	SYNC	SYNC	I	A	A0	Address Bit 0	I
2	RDY	Ready	O	B	A1	Address Bit 1	I
3	O1	Phase 1 Clock	I	C	A2	Address Bit 2	I
4	IRQ	Interrupt Request	O	D	A3	Address Bit 3	I
5	S.O.	Set Overflow	O	E	A4	Address Bit 4	I
6	NMI	Non-Maskable Interrupt	O	F	A5	Address Bit 5	I
7	RES	Reset	O	H	A6	Address Bit 6	I
8	D7	Data Bit 7	I/O	J	A7	Address Bit 7	I
9	D6	Data Bit 6	I/O	K	A8	Address Bit 8	I
10	D5	Data Bit 5	I/O	L	A9	Address Bit 9	I
11	D4	Data Bit 4	I/O	M	A10	Address Bit 10	I
12	D3	Data Bit 3	I/O	N	A11	Address Bit 11	I
13	D2	Data Bit 2	I/O	P	A12	Address Bit 12	I
14	D1	Data Bit 1	I/O	R	A13	Address Bit 13	I
15	D0	Data Bit 0	I/O	S	A14	Address Bit 14	I
16	-12V	*-12 Vdc		T	A15	Address Bit 15	I
17	+12V	*+12 Vdc		U	SYS O2	System Phase 2 Clock	I
18	CS8	*Chip Select 8		V	SYS R/W	System Read/Write	I
19	CS9	*Chip Select 9		W	R/W	Read/Write "Not"	I
20	CSA	*Chip Select A		X	TEST	*Test	I
21	+5V	+5 Vdc		Y	O2	Phase 2 Clock "Not"	I
22	GND	Ground		Z	RAM R/W	*RAM Read/Write	I

Note:
* = Not used on this module.



CABLE DRIVER ADAPTER/BUFFER SCHEMATIC



NOTE: UNLESS OTHERWISE SPECIFIED
 ① PINS 1C, 32A ON EURO CONNECTOR AND PINS 1A, 12, 14, 15, 16, 17, 18, 19, 20 ON U.S. CONNECTOR SHALL BE TIED TO +5V
 ② PINS 1A, 3A, 5A, 6A, 10A, 12A, 13A, 14A, 15A, 16A, 17A, 18A, 19A, 20A, 21A, 22A, 23A, 24A SHALL BE TIED TO GND.
 ③ ALL EVEN NUMBER PINS (2 THRU 40) SHALL BE TIED TO GND.
 4. ALL CAPACITORS ARE .10UF ±20%, 50V.

SPECIFICATIONS

Parameter	Value
Dimensions (1, 2, 3) Cable Driver Adapter Module Width Length Height Buffer Module Width Length Height	4.4 in. (111 mm) 5 in. (127 mm) 0.56 in. (14 mm) 3.9 in. (100 mm) 6.3 in. (160 mm) 0.56 in. (14 mm)
Weight	1.0 lb (450 g)
Power Cable Driver Adapter Module Buffer Module	+5V ± 5% 30 mA (0.15W)—Typical 275 mA (0.25W)—Maximum +5V ± 5% 190 mA (0.95W)—Typical 330 mA (1.7W)—Maximum
Environment Operating Temperature Storage Temperature Relative Humidity	0°C to 70°C -40°C to +85°C 0% to 85% (without condensation)
Propagation Time	50 ns—Maximum
Interfaces Interface Connectors AIM 65 Expansion Connector RM 65 Bus Interface Cables Number of Cables Cable Length Type Number of conductors per cable Wire Size	22/44—edge receptacle (0.156 in. centers) 64-pin plug (0.100 in. centers) per DIN 41612 (Row b is not installed) Two 6 feet Flat ribbon 40 #28 AWG
Notes: 1. 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. Length does not include extensions beyond the edge of the module due to connectors or the module ejector. 3. Dimensions conform to DIN 41612.	