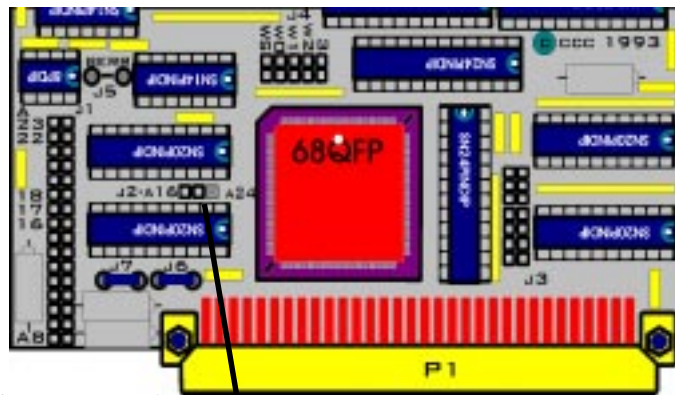


VBD SERIES ADDRESS MAP

HEX Select	Address Bits				Input Channels (S-D, R-D etc.)		Output Channels (D-S, D-R etc.)	
	A4	A3	A2	A1	Function	Chan#	Function	Chan#
00h	0	0	0	0	Read/Write Chan.	0	Write Chan.	0
02h	0	0	0	1		1		
04h	0	0	1	0		2		
06h	0	0	1	1		3	Readback Channel	3
08h	0	1	0	0		4		0
0Ah	0	1	0	1		5		1
0Ch	0	1	1	0		6		2
0Eh	0	1	1	1	7	3		
*10h	1	0	0	0	Read Status Chan.	0 & 4	*WS Units, Any Word here to Write 30 Degree Self-Test Angle for whole card	
12h	1	0	0	1		1 & 5		
14h	1	0	1	0		2 & 6		
16h	1	0	1	1		3 & 7		

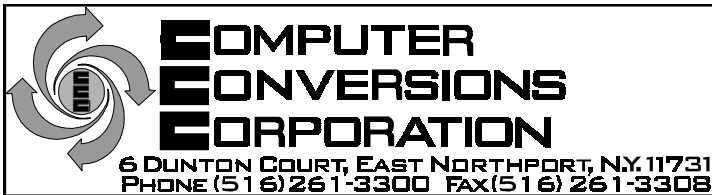


J2: insert A16 = Short, insert A24 = Std.

Base Address Select, J1 Jumpers = A0 - A23 Address Bits, in = 0, out = 1															
A		5				A		5				0		0	
1	0	1	0	0	1	0	1	1	0	1	0	0	1	0	0
23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8
														A7-A0	Base

PIN TERMINATIONS: VBR,VBW,VBD Series Units Front Panel Connectors P3 & P4 Disregard unused channels if not in your part number. © CCC 1997, 1999												
P2 Pins	P3 Pins	VBD SERIES High Density		VBW/VBR Units * = QM Option		P4 Pins	VBD SERIES High Density		VBR/VBW Units * = QM Option		P2 Pins	
C6	9	RH	Reference	-8 units RH/RL 0		9	RH	Reference	-8 units RH/RL 2		C18	
A6	28	RL				28	RL				A18	
A5	10	S1	Signals Channel 0	If used as Multispeed, chan.'s 0, 4 are Fine, Pair with chan.'s 2,5 = coarse & Read or Write In Succession		10	S1	Signals Channel 2	If used as Multispeed, chan.'s 2, 6 are Fine, Pair with chan.'s 3,7 = coarse & Read or Write In Succession		S1	A17
A2	13	S2				13	S2				S2	A14
C5	29	S3				29	S3				S3	C17
C2	32	S4				32	S4				S4	C14
C4	30	S1	Signals Channel 4	-8 units RH/RL 4		30	S1	Signals Channel 6	-8 units RH/RL 6		*B-	C16
C3	31	S2				31	S2				*B+	C15
A4	11	S3				11	S3				*A-	A16
A3	12	S4				12	S4				*A+	A15
A1	15	OPT.	Vel.0 or RL4	-8 units RH/RL 4		15	OPT.	Vel.2 or RL6	-8 units RH/RL 6		*M+	A13
C1	34		Vel.4 or RH4			*M-		C13				
C12	1	RH	Reference	-8 units RH/RL 1		1	RH	Reference	-8 units RH/RL 3		RH	C24
A12	20	RL				20	RL				RL	A24
A11	2	S1	Signals Channel 1	If used as Multispeed, chan.'s 0, 4 are Fine, Pair with chan.'s 2,5 = coarse & Read or Write In Succession		2	S1	Signals Channel 3	If used as Multispeed, chan.'s 2, 6 are Fine, Pair with chan.'s 3,7 = coarse & Read or Write In Succession		S1	A23
A8	5	S2				5	S2				S2	A20
C11	21	S3				21	S3				S3	C23
C8	24	S4				24	S4				S4	C20
C10	22	S1	Signals Channel 5	-8 units RH/RL 5		22	S1	Signals Channel 7	-8 units RH/RL 7		*B-	C22
C9	23	S2				23	S2				*B+	C21
A10	3	S3				3	S3				*A-	A22
A9	4	S4				4	S4				*A+	A21
A7	7	OPT.	Vel.1 or RL5	-8 units RH/RL 5		7	OPT.	Vel.3 or RL7	-8 units RH/RL 7		*M+	A19
C7	26		Vel.5 or RH5			*M-		C19				
P2	18	+12V	If ext. supplies	-12 units are +/- 12VDC Bus or Ext., Otherwise +/- 15 VDC Ext.		18	+12V	If ext. supplies	-12 units are +/- 12VDC Bus or Ext., Otherwise +/- 15 VDC Ext.		P2	
	36,37	GND	Power Ground			36,37	GND	Power Ground				
	19	-12V	If ext. supplies			19	-12V	If ext. supplies				
	6,25,14, & 33 DC COMMON		DC Common		6,25,14, & 33 DC COMMON		DC Common					
P3 & P4 Connector AMP #745784-4, Mates: TRW/CINCH # DC-37P Included												
P3 & P4 Connector AMP #745784-4, Mates: TRW/CINCH # DC-37P Included												

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VME BUS I/O Cards

Addressing, Status Word and Control word Details

ADDRESSING

The physical module address is decoded by setting Address Select Jumpers for the desired AM code (address modifier) and base address (board select). Jumper plug installed equals logic "0".

ADDRESSING RANGE

CCC VME Modules are configured for the A24 standard addressing over a 16M byte range, two shunt jumpers are provided to permit A16 short addressing over a 64K byte range.

A24 MODE:

Uses address lines A01-A023. Jumper (J2) is inserted in the A24 position and jumper A16 (J3) is removed to allow standard addressing over a full 16M byte range.

Client may use the following Am codes (address modifiers):

- "3D" Standard supervisory Data Access or,
- "39" Standard Non-Privileged Data Access

A16 MODE:

Uses address lines A01-A015. Jumper (J2) is inserted in the A16 position and jumper A16 (J3) is installed to allow short addressing over a 64K byte range. Client may use the following AM codes:

- "2D" short supervisory I/O Access or,
- "29" short Non-Privileged I/O Access.

The base address may be set up via reliable shunt plugs anywhere on the 256 byte boundaries.

NOTES:

1) **READBACK:** If channel zero is a primarily write converter function (ie: Digital to Synchro); then "00" in Hex is the address to Write the New Command Word, and "08" in Hex is the address to "READ-BACK" the Command Word for verification.

2) **READ STATUS:** This is a separate status register used for each module for fault and VME I/O Card configuration information.

On **High Density "VBD"** modules one status register is used for every two converters; they are paired per status register as channels 0 & 4, 1 & 5, 2 & 6, 3 & 7. all status bits apply equally to each channel with individual Fault/Bite Status bits for each respective channel.

3) **DTACK:** The CCC DTACK response is less then 9 VME Bus clock cycles for standard units, less then 14 for channels 4-7.

4) All CCC VME Bus cards are register based A24:D16 slave devices. All converters used are independent (not multiplexed) continuously tracking signal input converters, and independent continuously updated signal output converters.

These independent channels can be addressed and either written to, or read from, without any special timing considerations, specialized timing algorithms, or interrupts. The user simply addresses the channel, and reads or writes the data.

STATUS WORD & CONTROL WORD DETAILS

Status Word, Lower Byte (Higher Byte Not Used)								
	ST	PF	F1	F2	F3	MP	W	R
Bits	D7	D6	D5	D4	D3	D2	D1	D0

Status Word (Read Functions):

- 1 status word per channel upto 4 channel units,
- 1 status word per every 2 channels on VBD units.

Bit D0: 0 = Read Channel:

This channel is configured for a Read Command.
ex: Synchro to Digital or A to D.

Bit D1: 0 = Write Channel:

This channel is configured for a write command.
ex: Digital to Synchro or D to A

*If both bits D0 and D1 are logic 1, this indicates no active module.

*If both bits D0 and D1 are logic 0, = configuration - Jumper error.

Bit D2 : 0 = Multi-Pair:

This channel is paired with adjacent channel for a multispeed or Multiturn operation.

Channels 0 and 1, (4 and 5 Hi-Den)= Multi-pair #0,1

Channels 2 and 3, (6 and 7 Hi-Den)= Multi-pair #2,3

The paired channels should be read in succession.

Not used on boards with multispeed converters.

Bit D3 : 1 = Converter Busy, (F3 Fault) not required to be polled, all cards insure valid data is always read by the bus.

Bit D4 : 1 Converter Fault Channels 0,1,2, and 3

Bit D5 : 1 Converter Fault Channels 4,5,6, and 7 (VBD units)

1Loss of Reference, Loss of Signal, overspeed/accel. & conv. fault. If converter is given a large simulated step input stays untill settled.

Bit D6 : 0 = Power Fail, loss of +/-15 or +/-12VDC supplies.

Bit D7 : 1 = In Self Test Mode, all input converters should be reading 30° test angle +/- .15°. (-WS models only, else ignore).

Control Word (Write Self Test): (-WS Models Only)

Control words compliment the status word address locations.

Activating or de-activating the self-test mode by setting Bit D7 high = 1 in any of these locations will put the card into (or out of) the self test mode.

Bit D7 : 1 = Force into Self Test Mode, all input converters will internally disconnect their input signals and instead switch to read an analog simulated 30° test angle for a confirmation test.

When activated look at the converter fault bits indicating when ready to read, if not settled (unfaulted) within 2 seconds = failed.

Proceed by comparing the data read on each channel to 30° +/- .15°.

When done set to 0 to activate the run mode, again check fault bits in the status word to make sure the converters are settled.

Bit D7 : 1 = Force into Run Mode, normal operation.