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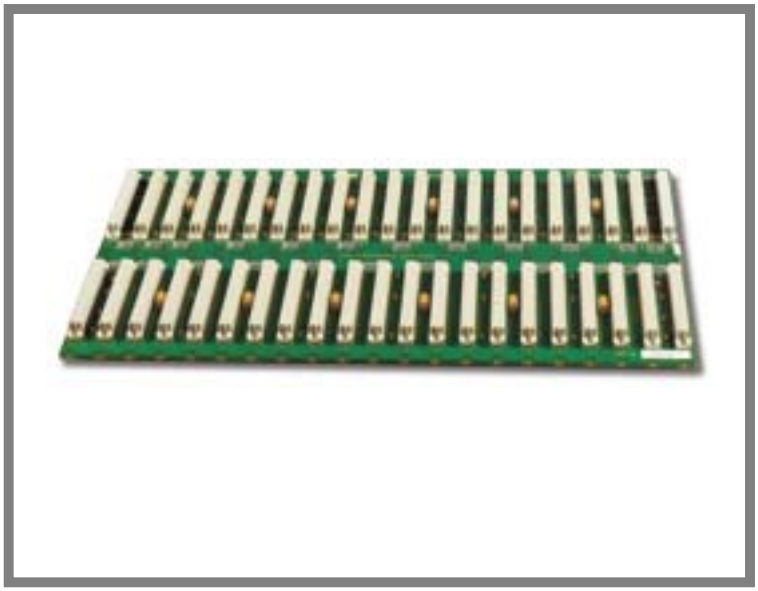
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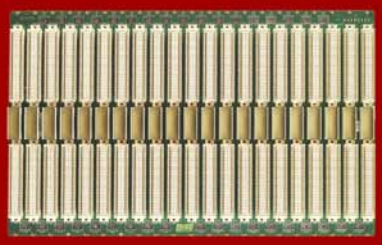
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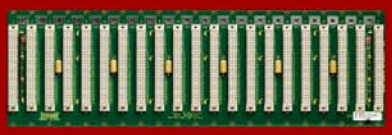
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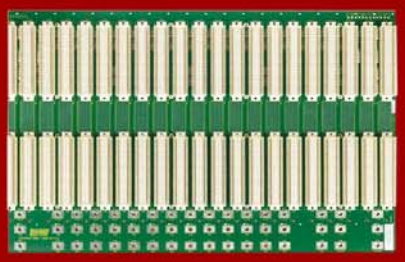
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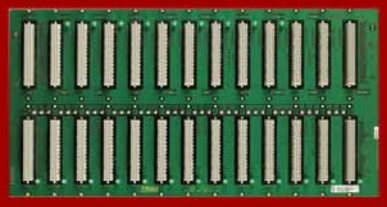












Elma Bustronic VME

Reference Sheet

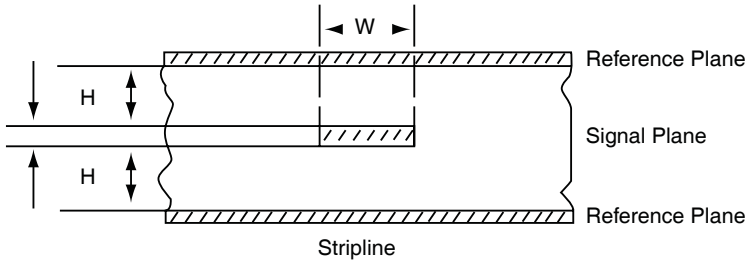
Rev. C

VME REFERENCE SHEET

The VME reference sheet provides relevant reference material for the VME product line. The information provided may change at anytime. Elma Bustronic does not assume responsibility for the accuracy of the content provided within.

Stripline Design

The stripline design reduces crosstalk by shielding the signal lines with the power layers above and below. Our standard design features 2 oz. copper outer ground planes that fully shield the backplane and minimize EMI/RFI emissions susceptibility, minimize crosstalk, and maximize power distribution. In addition, the robust outer ground layers provide mechanical protection for the backplane. Measured results show that Elma Bustronic backplanes are among the quietest in the industry.



Stripline

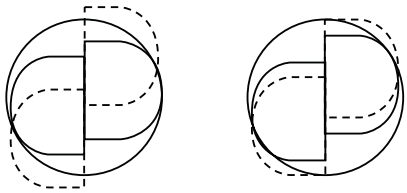
Pressfit Recommendations

AMP*

The AMP pressfit recommendations apply to the 2 mm hard metric connector specified on VME64x backplanes.

Details of the PCB hole size and finish apply to all Action Pin contacts. IEC61076-4-101 specifies the position of holes to within 0.1 mm [.004]. For feedthrough posts, AMP recommends true position within 0.05 mm [.002] to minimize out-of-position post tips. If repair or replacement is necessary, a new contact can be inserted into the same hole three times without damage.

**AMP catalog 1307515, issued 9-99*


Min. Hole ø
0.55 [.0217]

Max. Hole ø
0.65 [.0256]

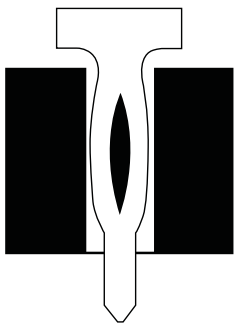
Two spring members compress to different degrees to accommodate hole tolerances.

Harting**

The Harting pressfit recommendations apply to the Har-bus™ connectors specified on VME and VME64 backplanes (both 96-pin and 160-pin).

Due to the high deformation resistance and resilience of the Har-press contacts, they can be easily and repeatedly removed in case of repairs without impairment to their functioning. The plated through holes of tinned PCBs should have diameters of .94-1.09 mm, thickness of 1.6 mm or more.

***information provided by Harting 8-3-00*



Drill hole size of 1.15 mm $^{-.03}$,
25-50 µm Cu, and 5-15 µm Sn.

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VME REFERENCE SHEET

General Connector Specifications-VME

Type:	DIN 41612 Type C and Auto Bus Grant
Tempurature Range:	-40°C to +120°C
Insertion Force (mating pair):	> 90 Newtons
Withdrawl Force (unmating pair):	> 90 Newtons
	Ground Pin to Shield -- .15 Newtons min.
Retention Force (pin to board):	30 Newtons per contact min.

General Connector Specifications-VME64x

Type:	Harting Har-bus™ 160-pin connector
Connector Pitch:	2.54mm
Temperature Range:	-65° C to + 125° C
Flammability:	UL 94V-0
Contact Resistance:	15 m max.
Insulation Resistance:	10^{12} m max.
Working Current:	2A max.

Other Connectors

Friction-Lock Header (16-pin)

Type:	AMP 1-644752-6 or equivalent
Contact Materials:	Copper Alloy
Housing Flammability Rating:	UL94V-0
Housing Material:	Polyester
Current Rating (Amps):	7 Amperes Max.
Mating Lock Connector Type:	Friction Lock
PCB Thickness (mm [in]):	2.36-3.18 [.093-.125]
Post Size (mm [in]):	1.14 [0.45] Sq.
Voltage Rating:	600 VAC
Termination Post Length (mm [in]):	4.45 [.175]

Pin	Signal
01	-12V
02	STB
03	+12V
04	KEY
05	GND
06	GND
07	GND
08	GND
09	VCC
10	VCC
11	VCC
12	GND
13	VCC
14	ACFL
15	SYSFL
16	RESET

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VME REFERENCE SHEET

Other Connectors

Friction-Lock Header (8-pin)

Type:	Molex 22-27-2081 or equivalent
Plating Material:	Tin
Housing Flammability Rating:	UL94V-0
Housing Material:	Nylon
Current Rating (Amps):	4A max. with 22 AWG wire
Mating Lock Connector Type:	Friction Lock
Post Size (mm [in]):	0.64 (0.025) Sq. Pin Brass
Spacing:	.1" centers
Voltage Rating:	250 VAC
Operating Temperature:	0° C to 75° C

Pin	Signal
01	GND
02	+5V
03	ACFL
04	SYSFL
05	SYSRST
06	3.3V
07	+12V
08	-12V

Friction-Lock Header (12-pin)

Type:	Molex 26-60-4120 or equivalent
Plating Material:	Tin
Housing Flammability Rating:	UL94V-0
Housing Material:	Nylon
Current Rating (Amps):	5A max. with 18 AWG wire
Mating Lock Connector Type:	Friction Lock
Post Size (mm [in]):	1.14 (0.045) Sq. Pin Brass
Spacing:	.156" centers
Voltage Rating:	250 VAC
Operating Temperature:	0° C to 50° C

Pin	Signal
01	-V2
02	-V2
03	-V2
04	-V1
05	-V1
06	-V1
07	+V2
08	+V2
09	+V2
10	+V1
11	+V1
12	+V1

Power Interfaces

Power Connections:

Power bugs or taps are rated at 22 A per connection (30° C rise). Faston blades are an option at 12 A per blade and take up less space. The M4 screw stud is another termination option, rated at 18 A.

Power Bugs:

Material:	Copper Alloy 725
Current:	22A @ 30° C rise
Contact Resistance:	2 m max.
Insertion Force:	400lbs. max.
Retention Force:	80lbs. min.
Thread Torque:	8in.-lbs. max.
Temperature:	-55° C to 105° C

Environmental:

Temperature Range, Storage:	-55° C to 125° C
Temperature Range, Operating:	-25° C to 85° C
Humidity:	90% R.H. non-condensing
Shock and Vibration:	Exceeds ETS 300-019-2-5

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VME REFERENCE SHEET

CONDUCTOR RESISTANCE*

Conductor Resistance

R= 0.6787e-6(1/TW)

T= etch thickness
W= etch width

Elma Bustronic typically uses 0.5 oz., 1.0 oz. or 2.0 oz. of copper translated to T= .7 mil., 1.4 mil., and 2.8 mil. respectively. Etch width varies from 4 to 15 mil.
*per IPC-D 275

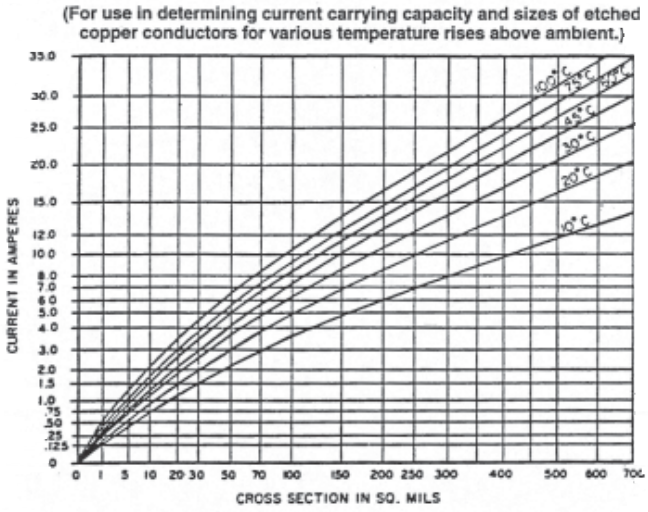


Figure A External Conductors

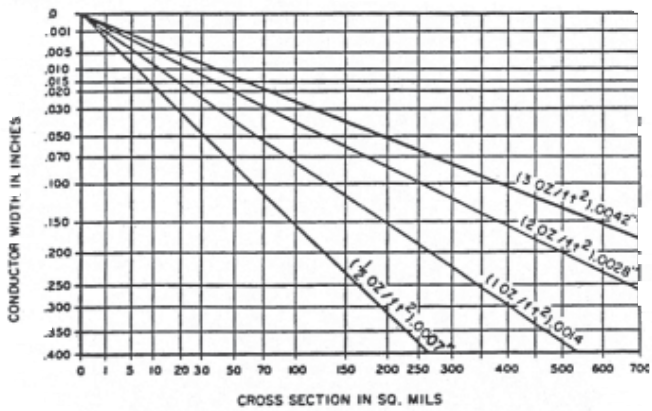


Figure B Conductor width to cross-section relationship

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VME REFERENCE SHEET

VME64x Pinouts

Pin Assignments for J1 Connectors (Pin rows in each connector are Z, A, B, C and D)						Pin Assignments for J2 Connectors (Pin rows in each connector are Z, A, B, C and D)					
Pin Number	Row Z Signal Mnemonic	Row A Signal Mnemonic	Row B Signal Mnemonic	Row C Signal Mnemonic	Row D Signal Mnemonic	Pin Number	Row Z Signal Mnemonic	Row A Signal Mnemonic	Row B Signal Mnemonic	Row C Signal Mnemonic	Row D Signal Mnemonic
1	MPR	D00	BBSY*	D08	VPC	1	UD	UD	+5V	UD	UD
2	GND	D01	BCLR*	D09	GND	2	GND	UD	GND	UD	UD
3	MCLK	D02	ACFAIL*	D10	+V1	3	UD	UD	RETRY*	UD	UD
4	GND	D03	BG0IN*	D11	+V2	4	GND	UD	A24	UD	UD
5	MSD	D04	BG0OUT*	D12	RsvU	5	UD	UD	A25	UD	UD
6	GND	D05	BG1IN*	D13	-V1	6	GND	UD	A26	UD	UD
7	MMD	D06	BG1OUT*	D14	-V2	7	UD	UD	A27	UD	UD
8	GND	D07	BG2IN*	D15	RsvU	8	GND	UD	A28	UD	UD
9	MCTL	GND	BG2OUT*	GND	GAP*	9	UD	UD	A29	UD	UD
10	GND	SYSCLK	BG3IN*	SYSFAIL*	GA0*	10	GND	UD	A30	UD	UD
11	RESP*	GND	BG3OUT*	BERR*	GA1*	11	UD	UD	A31	UD	UD
12	GND	DS1*	BR0*	SYSRESET*	+3.3V	12	GND	UD	GND	UD	UD
13	RsvBus0	DS0*	BR1*	LWORD*	GA2*	13	UD	UD	+5V	UD	UD
14	GND	WRITE*	BR2*	AM5	+3.3V	14	GND	UD	D16	UD	UD
15	RsvBus1	GND	BR3*	A23	GA3*	15	UD	UD	D17	UD	UD
16	GND	DTACK*	AM0	A22	+3.3V	16	GND	UD	D18	UD	UD
17	RsvBus2	GND	AM1	A21	GA4*	17	UD	UD	D19	UD	UD
18	GND	AS*	AM2	A20	+3.3V	18	GND	UD	D20	UD	UD
19	RsvBus3	GND	AM3	A19	RsvBus10	19	UD	UD	D21	UD	UD
20	GND	IACK*	GND	A18	+3.3V	20	GND	UD	D22	UD	UD
21	RsvBus4	IACKIN*	SERCLK	A17	RsvBus11	21	UD	UD	D23	UD	UD
22	GND	IACKOUT*	SERDAT	A16	+3.3V	22	GND	UD	GND	UD	UD
23	RsvBus5	AM4	GND	A15	RsvBus12	23	UD	UD	D24	UD	UD
24	GND	A07	IRQ7*	A14	+3.3V	24	GND	UD	D25	UD	UD
25	RsvBus6	A06	IRQ6*	A13	RsvBus13	25	UD	UD	D26	UD	UD
26	GND	A05	IRQ5*	A12	+3.3V	26	GND	UD	D27	UD	UD
27	RsvBus7	A04	IRQ4*	A11	LI/I*	27	UD	UD	D28	UD	UD
28	GND	A03	IRQ3*	A10	+3.3V	28	GND	UD	D29	UD	UD
29	RsvBus8	A02	IRQ2*	A09	LI/O*	29	UD	UD	D30	UD	UD
30	GND	A01	IRQ1*	A08	+3.3V	30	GND	UD	D31	UD	UD
31	RsvBus9	-12V	+5V STDBY	+12V	GND	31	UD	UD	GND	UD	GND
32	GND	+5V	+5V	+5V	VPC	32	GND	UD	+5V	UD	VPC

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VME REFERENCE SHEET

VME Pinouts

Pin Assignments for J1 Connectors (Pin rows in each connector are A, B and C)				Pin Assignments for J2 Connectors (Pin rows in each connector are A, B and C)			
Pin Number	Row A Signal Mnemonic	Row B Signal Mnemonic	Row C Signal Mnemonic	Pin Number	Row A Signal Mnemonic	Row B Signal Mnemonic	Row C Signal Mnemonic
1	D00	BBSY*	D08	1	User Defined	+5V	User Defined
2	D01	BCLR*	D09	2	User Defined	GND	User Defined
3	D02	ACFAIL*	D10	3	User Defined	RESERVED	User Defined
4	D03	BG0IN*	D11	4	User Defined	A24	User Defined
5	D04	BG0OUT*	D12	5	User Defined	A25	User Defined
6	D05	BG1IN*	D13	6	User Defined	A26	User Defined
7	D06	BG1OUT*	D14	7	User Defined	A27	User Defined
8	D07	BG2IN*	D15	8	User Defined	A28	User Defined
9	GND	BG2OUT*	GND	9	User Defined	A29	User Defined
10	SYSCLK	BG3IN*	SYSFAIL*	10	User Defined	A30	User Defined
11	GND	BG3OUT*	BERR*	11	User Defined	A31	User Defined
12	DS1	BR0*	SYSRESET*	12	User Defined	GND	User Defined
13	DS0	BR1*	LWORD*	13	User Defined	+5V	User Defined
14	WRITE*	BR2*	AM5	14	User Defined	D16	User Defined
15	GND	BR3*	AM23	15	User Defined	D17	User Defined
16	DTACK*	AM0	AM22	16	User Defined	D18	User Defined
17	GND	AM1	AM21	17	User Defined	D19	User Defined
18	AS*	AM2	AM20	18	User Defined	D20	User Defined
19	GND	AM3	AM19	19	User Defined	D21	User Defined
20	IACK*	GND	AM18	20	User Defined	D22	User Defined
21	IACKIN*	SERCLK	AM17	21	User Defined	D23	User Defined
22	IACKOUT*	SERDAT	AM16	22	User Defined	GND	User Defined
23	AM4	GND	AM15	23	User Defined	D24	User Defined
24	A07	IRQ7*	AM14	24	User Defined	D25	User Defined
25	A06	IRQ6*	AM13	25	User Defined	D26	User Defined
26	A05	IRQ5*	AM12	26	User Defined	D27	User Defined
27	A04	IRQ4*	AM11	27	User Defined	D28	User Defined
28	A03	IRQ3*	AM10	28	User Defined	D29	User Defined
29	A02	IRQ2*	AM09	29	User Defined	D30	User Defined
30	A01	IRQ1*	AM08	30	User Defined	D31	User Defined
31	-12V	+5V STDBY	+12V	31	User Defined	GND	User Defined
32	+5V	+5V	+5V	32	User Defined	+5V	User Defined

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VME REFERENCE SHEET

VXI Connector Pin Assignments

VXIbus P2 Pin Definitions: Slot 0					VXIbus P2 Pin Definitions: Slot 1-12				
Pin Number	Row A Signal Mnemonic	Row B Signal Mnemonic	Row C Signal Mnemonic	Pin Number	Pin Number	Row A Signal Mnemonic	Row B Signal Mnemonic	Row C Signal Mnemonic	Pin Number
1	ECLTRG0	+5V	CLK10+	1	1	ELCTRG0	+5V	CLK10+	1
2	-2V	GND	CLK10-	2	2	-2V	GND	CLK10-	2
3	ECLTRG1	RSV1	GND	3	3	ELCTRG1	RSV1	GND	3
4	GND	A24	-5.2V	4	4	GND	A24	-5.2V	4
5	MODID12	A25	LBUSC00	5	5	LBUSA00	A25	LBUSC00	5
6	MODID11	A26	LBUSC01	6	6	LBUSA01	A26	LBUSC01	6
7	-5.2V	A27	GND	7	7	-5.2V	A27	GND	7
8	MODID10	A28	LBUSC02	8	8	LBUSA02	A28	LBUSC02	8
9	MODID09	A29	LBUSC03	9	9	LBUSA03	A29	LBUSC03	9
10	GND	A30	GND	10	10	GND	A30	GND	10
11	MODID08	A31	LBUSC04	11	11	LBUSA04	A31	LBUSC04	11
12	MODID07	GND	LBUSC05	12	12	LBUSA05	GND	LBUSC05	12
13	-5.2V	+5V	-2V	13	13	-5.2V	+5V	-2V	13
14	MODID06	D16	LBUSC06	14	14	LBUSA06	D16	LBUSC06	14
15	MODID05	D17	LBUSC07	15	15	LBUSA07	D17	LBUSC07	15
16	GND	D18	GND	16	16	GND	D18	GND	16
17	MODID04	D19	LBUSC08	17	17	LBUSA08	D19	LBUSC08	17
18	MODID03	D20	LBUSC09	18	18	LBUSA09	D20	LBUSC09	18
19	-5.2V	D21	-5.2V	19	19	-5.2V	D21	-5.2V	19
20	MODID02	D22	LBUSC10	20	20	LBUSA10	D22	LBUSC10	20
21	MODID01	D23	LBUSC11	21	21	LBUSA11	D23	LBUSC11	21
22	GND	GND	GND	22	22	GND	GND	GND	22
23	TTLTRG0*	D24	TTLTRG1*	23	23	TTLTTRG0*	D24	TTLTRG1*	23
24	TTLTRG2*	D25	TTLTRG3*	24	24	TTLTTRG2*	D25	TTLTRG3*	24
25	+5V	D26	GND	25	25	+5V	D26	GND	25
26	TTLTRG4*	D27	TTLTRG5*	26	26	TTLTTRG4*	D27	TTLTRG5*	26
27	TTLTRG6*	D28	TTLTRG7*	27	27	TTLTTRG6*	D28	TTLTRG7*	27
28	GND	D29	GND	28	28	GND	D29	GND	28
29	RSV2	D30	RSV3	29	29	RSV2	D30	RSV3	29
30	MODID00	D31	GND	30	30	MODID	D31	GND	30
31	GND	GND	+24V	31	31	GND	GND	+24V	31
32	SUMBUS	+5V	-24V	32	32	SUMBUS	+5V	-24V	32

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VME REFERENCE SHEET

VXI Connector Pin Assignments

VXIbus P2 Pin Definitions: Slot 0					VXIbus P2 Pin Definitions: Slot 1-12				
Pin Number	Row A Signal Mnemonic	Row B Signal Mnemonic	Row C Signal Mnemonic	Pin Number	Pin Number	Row A Signal Mnemonic	Row B Signal Mnemonic	Row C Signal Mnemonic	Pin Number
1	ECLTRG2	+24V	+12V	1	1	ECLTRG2	+24V	+12V	1
2	GND	-24V	-12V	2	2	GND	-24V	-12V	2
3	ECLTRG3	GND	RSV4	3	3	ECLTRG3	GND	RSV4	3
4	-2V	RSV5	+5V	4	4	-2V	RSV5	+5V	4
5	ECLTRG4	-5.2V	RSV6	5	5	ECLTRG4	-5.2V	RSV6	5
6	GND	RSV7	GND	6	6	GND	RSV7	GND	6
7	ECLTRG5	+5V	-5.2V	7	7	ECLTRG5	+5V	-5.2V	7
8	-2V	GND	GND	8	8	-2V	GND	GND	8
9	STARY12+	+5V	STARX01+	9	9	LBUSA12	+5V	LBUSC12	9
10	STARY12-	STARY01-	STARX01-	10	10	LBUSA13	LBUSC15	LBUSC13	10
11	STARX12+	STARX12-	STARY01+	11	11	LBUSA14	LBUSA15	LBUSC14	11
12	STARY11+	GND	STARX02+	12	12	LBUSA16	GND	LBUSC16	12
13	STARY11-	STARY02-	STARX02-	13	13	LBUSA17	LBUSC19	LBUSC17	13
14	STARX11+	STARX11-	STARY02+	14	14	LBUSA18	LBUSA19	LBUSC18	14
15	STARY10+	+5V	STARX03+	15	15	LBUSA20	+5V	LBUSC20	15
16	STARY10-	STARY03-	STARX03-	16	16	LBUSA21	LBUSC23	LBUSC21	16
17	STARX10+	STARX10-	STARY03+	17	17	LBUSA22	LBUSA23	LBUSC22	17
18	STARY09+	-2V	STARX04+	18	18	LBUSA24	-2V	LBUSC24	18
19	STARY09-	STARY04-	STARX04-	19	19	LBUSA25	LBUSC27	LBUSC25	19
20	STARX09+	STARX09-	STARY04+	20	20	LBUSA26	LBUSA27	LBUSC26	20
21	STARY08+	GND	STARX05+	21	21	LBUSA28	GND	LBUSC28	21
22	STARY08-	STARY05-	STARX05-	22	22	LBUSA29	LBUSC31	LBUSC29	22
23	STARX08+	STARX08-	STARY05+	23	23	LBUSA30	LBUSA31	LBUSC30	23
24	STARY07+	+5V	STARX06+	24	24	LBUSA32	+5V	LBUSC32	24
25	STARY07-	STARY06-	STARX06-	25	25	LBUSA33	LBUSC35	LBUSC33	25
26	STARX07+	STARX07-	STARY06+	26	26	LBUSA34	LBUSA35	LBUSC34	26
27	GND	GND	GND	27	27	GND	GND	GND	27
28	STARX+	-5.2V	STARY+	28	28	STARX+	-5.2V	STARY+	28
29	STARX-	GND	STARY-	29	29	STARX-	GND	STARY-	29
30	GND	-5.2V	-5.2V	30	30	GND	-5.2V	5.2V	30
31	CLK100+	-2V	SYNC100+	31	31	CLK100+	-2V	SYNC100+	31
32	CLK100-	GND	SYNC100-	32	32	CLK100-	GND	SYNC100-	32

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VME REFERENCE SHEET

GEOGRAPHICAL ADDRESSING*

Physical Slot Address

Slot Number	GAP* Pin	GA4* Pin	GA3* Pin	GA2* Pin	GA1* Pin	GA0* Pin
1	Open	Open	Open	Open	Open	GND
2	Open	Open	Open	Open	GND	Open
3	GND	Open	Open	Open	GND	GND
4	Open	Open	Open	GND	Open	Open
5	GND	Open	Open	GND	Open	GND
6	GND	Open	Open	GND	GND	Open
7	Open	Open	Open	GND	GND	GND
8	Open	Open	GND	Open	Open	Open
9	GND	Open	GND	Open	Open	GND
10	GND	Open	GND	Open	GND	Open
11	Open	Open	GND	Open	GND	GND
12	GND	Open	GND	GND	Open	Open
13	Open	Open	GND	GND	Open	GND
14	Open	Open	GND	GND	GND	Open
15	GND	Open	GND	GND	GND	GND
16	Open	GND	Open	Open	Open	Open
17	GND	GND	Open	Open	Open	GND
18	GND	GND	Open	Open	GND	Open
19	Open	GND	Open	Open	GND	GND
20	GND	GND	Open	GND	Open	Open
21	Open	GND	Open	GND	Open	GND

*per ANSI/VITA 1.1-1997

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