Amphenol-BSI VME64x 6U 12 slot Manual

Amphenol-BSI

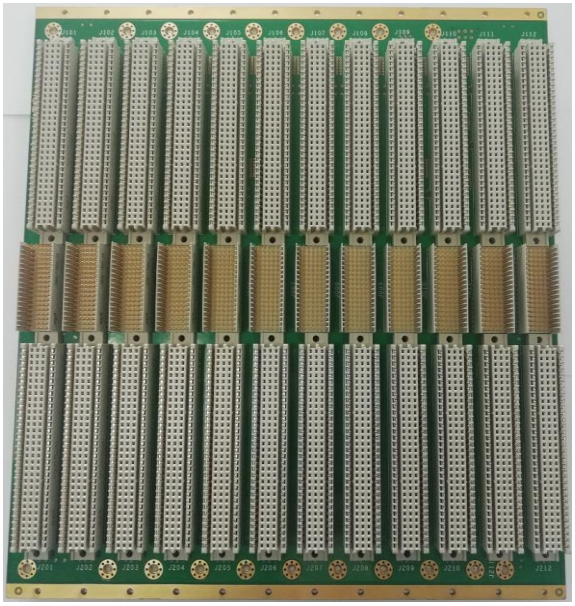
Amphenol-BSI is an industry leader of backplane and system solutions. Amphenol-BSI has been a leading designer and manufacture of backplanes for more than 30 years.

Amphenol-BSI deliver:

- Industry leading interconnect technology
- Advanced printed circuit capabilities and partnerships
- Innovative backplane system design and manufacturing
- Integrated design / applications engineering services
- Flexible, global support and supply chain management
- Most extensively tooled Backplane Supplier in the industry
- Industry leading Mechanical and SI test solutions
- Lowest cost solution on highest performance backplane

Amphenol-BSI VME64x Backplanes

Amphenol-BSI's VME64x high performance backplanes are available in both 3U & 6U form factors. All VME backplanes are compliant to VITA VME64x specifications. ABSI can customize the VME64x backplane against our customer's specific requirements.



Description

VME64x is an extension of VITA 1-1994 (S2011) and provides a 64-bit data transfer bus. VME64x defines a new 160 pin J1 &J2 connector and an optional 133 pin hard metric 2.0mm J0 connector. It also offers more user defined I/Os. 3.3V and auxiliary power entry are available under the VME64x specification. It also includes additional 5V pins in the connector pin out. The VME64x backplane supports 19" rack applications. The maximum form factor expands to a 21-slot backplane. The VME64x system is backward compatible with the VME64 system. A DIN41612 connector can be used in VME64x system.

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Backplane Height:
Amphenol BSI VME64x backplane offer 4 different height options covering **3U, 6U,7U and 9U.**

3U backplane
The 3U backplane is the minimum size of the VME64x backplane. The 3U backplane incorporates the following functional features:
- IEC 61076-4-113 160 pin connector for the J1 connector, with properly defined pin tail lengths
- Connects all assigned connector ground pins in all rows to the backplane's ground plane
- Connects the geographical address pins as defined in the VITA standard
- Routes and terminates all defined VME64 and VME64x bused signal lines
- Provides power connection and distribution for +5V, +3.3V, +12V, -12V, +V1, +V2,-V1, -V2, VPC and +5V STDBY.

6U backplane
The 6U backplane is the standard height of the VME64x backplane family. The 6U backplane incorporates the following functional features:
- Monolithic PCB
- IEC 61076-4-113 160 pin connectors for both the J1 and J2 connectors with properly defined pin tail lengths
- Connects all assigned connector ground pins in all rows to the backplane's ground plane
- Connects the geographical address pins as defined in VITA standard
- Routes and terminates all defined VME64 and VME64x bused signal lines
- Provides power connection and distribution for +5V, +3.3V, +12V, -12V, +V1, +V2,-V1, -V2, VPC and +5V STDBY.
- If rear I/O is required, rear connector(s) are designed per IEEE 1101.11 for support of rear I/O transition boards.

7U backplane
The 7U backplane is 1U higher than the 6U backplane. The 7U backplane provides additional footprint areas to position power entry connectors to increase current capacity. Apart from power entry, the 7U backplane has the same functional features as the 6U backplane.

9U backplane
The 9U backplane is compliant to ANSI/VITA 1.3-1997, and VME64x 9U Standard which defines 9U x 400 mm plug-in boards, backplanes and sub racks for use in applications requiring large format printed circuit boards.
The following new features on backplane are defined for optional use in VME64 based applications:
- Addition of P5/J5 and P6/J6 connections centered on the lower 3U area using IEC 61076-4-101 connectors.
- Optional P3/J3 connections centered on the lower 3U area using the same IEC 61076-4-113 connectors as the upper 6U.
- A user defined P4/J4 connector between P2/J2 and P5/J5 similar to P0/J0 in VME64x with: - 95 user defined pins or - 4.8 mm (nominal) cavity option for P0/J0 and P4/J4 connectors per IEC 61076-4-101
- P5/J5 and P6/J6 connectors using the cPCI family of connectors

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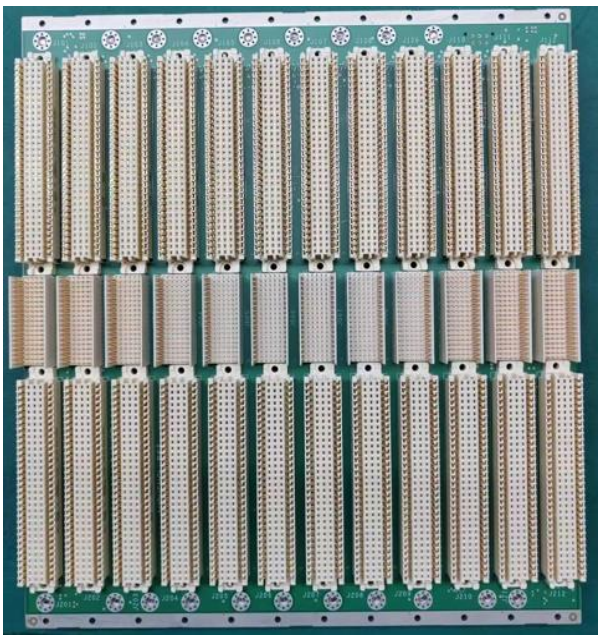
Amphenol-BSI VME Features:

- Compliant to VITA 1.1-1997 (S2011) Specification
- 2 to 21 slots configuration
- Daisy chain routing
- 4 HP slot pitch
- IEC 61076-4-113 & IEC 603-2 Style C connectors
- Support Rear IOs
- Screws/studs for power entry
- PCB material FR-4, UL recognized 94-VO
- RoHS compliant

PCB information:

- 10 layers board
- PCB thickness- approx. 3.2 mm
- Slot pitch 0.8”
- Independent power and ground layers for power distribution
- Fully shielded backplane with use of sufficient ground plane layers to minimize RFI/EMI emissions/ susceptibility and crosstalk
- Signal impedance Z0 55 Ohms +/-10%
- FR4 or equivalent material
- Operating temperature- -40 °C ... +85 °C

RTM PROVISION



TOP SIDE

BOTTOM SIDE

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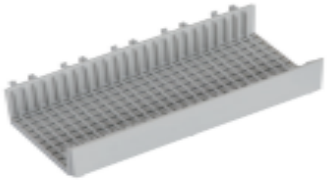
Connector Type:
In J1&J2 area, two connector types are used on the VME backplane, one for 96 pin configurations and one for 160 pin configurations. The 160 pin connector as defined in the IEC 61076-4-113 connector specification is an expanded 96 pin connector that is complementary to the IEC 603-2 Style C connector. The 160 pin connector contains 5 rows of contacts. The 96 pin connector has 3 rows of contacts, representative of the center 3 rows of contacts in the 160 pin connector.
Within the 160 pin connector, Row A; Row B and Row C are identical in form, fit and function to the 96 pin IEC 603-2 Style C connectors, used in original VME and VME64 applications. Row Z and Row D adds 64 pins to the outer shell of the connector providing a total of 160 pins.
The 160 pin connector is compatible with the 96 pin connector. Boards with 160 pin connectors can plug into backplanes using 96 pin connectors and boards with 96 pin connectors can plug into backplanes using 160 pin connectors.
In the VME64x standard, an optional 2 mm hard metric 95 signal pin plus 19 or 38 ground pins P0/J0 connector is available for more user defined I/O through the backplane. This connector is called the P0 connector. It is located in central to the J1 and J2 backplane.

The 96 pin connector is available across numerous manufacturers from Amphenol AICC, Harting, Ept, Erni, etc.

The 160 pin Harting connector 2021601601(96+64gnd) , RTM Provision connector -02 02 160 2301 (17MM) Shroud part no. - 02 44 000 0001

133 pins hard metric J0 connector example: Amphenol FCI-HM2P71PDE121N9LF (95+38gnd) , RTM Provision connector - HM2P71PNE124GFLF (16MM) ,Shroud part no. - HM2H71P115LF



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6U Dimension Table:

Slot Numbers	Height in Inch	Height in mm	Length in Inch	Length in mm
2	10.317	262.05	1.560	39.640
3	10.317	262.05	2.360	59.960
4	10.317	262.05	3.160	80.280
5	10.317	262.05	3.960	100.600
6	10.317	262.05	4.760	121.920
7	10.317	262.05	5.560	141.240
8	10.317	262.05	6.360	161.560
9	10.317	262.05	7.160	181.880
10	10.317	262.05	7.960	202.200
11	10.317	262.05	8.760	222.520
12	10.317	262.05	9.560	242.840
13	10.317	262.05	10.360	263.160
14	10.317	262.05	11.160	283.480
15	10.317	262.05	11.960	303.800
16	10.317	262.05	12.760	324.120
17	10.317	262.05	13.560	344.440
18	10.317	262.05	14.360	364.760
19	10.317	262.05	15.160	385.080
20	10.317	262.05	15.960	405.400
21	10.317	262.05	16.760	425.720

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The VMEbus, based on the IEEE 1014 and IEC 821 standards, has become an established industrial standard worldwide. The VME64 represents an extension of the VME family according to ANSI/VITA 1-1994 and permits 64-bit data traffic. The VME64x extends the VME family according to ANSI/VITA 1.1-1997 and is available with the optional 95/133-pin, 2 mm connector J0. VME64 and VME64x use 160-pins connectors. This system is downward-compatible, so that assemblies with 96-pin connectors to DIN 41612 can still be used. All **ABSI** VMEbus boards are based on the HIGH-SPEED DESIGN concept. Low reflection is achieved by means of uniform signal line surge impedance. Shielding of each individual signal line assures minimal coupling and therefore guarantees trouble-free operation even when expanded to the 64-bit modewith the 2e protocol (160 MByte/s).

Termination

In order to prevent interference on signal lines which might result from reflection at open line ends, these lines must be terminated on the VMEbus. ON/IN-board (on the backplane) or OFF-board (external) termination is possible. A distinction is made between passive and active termination. The advantage of active termination is reduced closed-circuit current consumption. Passive termination features better frequency response and a wider temperature range.

Daisy chain wiring

A distinction is made between manual daisy chaining and automatic daisy chaining. Automatic daisy chaining works without jumpers, i. e. the user does not need to bother with plugging in and removing jumpers. This has the added advantage that incorrect jumper placement due to operator error is precluded.

Manual daisy chaining

The daisy chain lines are brought out as gold-plated pins next to the DIN connectors. The jumpers can be inserted on the 0.6 x 0.6 mm pins from the wiring or component side.

Automatic daisy chaining

Automatic daisy chaining can be implemented in two ways:

- Thanks to the use of connectors with integrated mechanical switches, the contact is automatically opened when a daughter board is inserted and closed when the board is removed.
- The second type of automatic daisy chaining is implemented using the OR logic integrated in the backplane. This logic closes the daisy chain when the daughter board is removed.

CHASSIS GND connection

There is a solid electrically conductive chassis GND surface in the backplane to-card rack mounting area. This guarantees EMC-tight mounting of the bus board on the card rack.

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Power connections

The main operating voltage is supplied via M3 PEM studs and screw connections for VME64 and VME64x.Optimal daughter board supply and trouble-free operation are ensured by the arrangement of the feed modules on the backplane.

Power Delivery

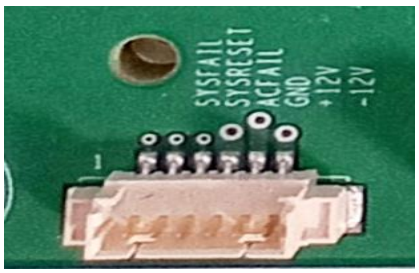
- x10 Ground locations
- x4 +3.3V locations
- x4 +5V locations
- x1 +12V location
- x1 -12V location

Max. Current Carrying Capacity per ANSI/VITA 1.7-2003
+5V: 12A / Slot @ 95°C
+3.3V: 18 A / Slot @ 95°C
+/-12V; +/-V1; +/-V2: 3 A / Slot at +48 V (38-75 V) @ 95°C each
VPC: 6 A / Slot @ 95°C(Can be merged with +5V)

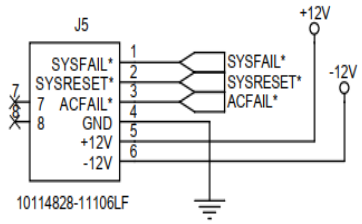
Utility connector

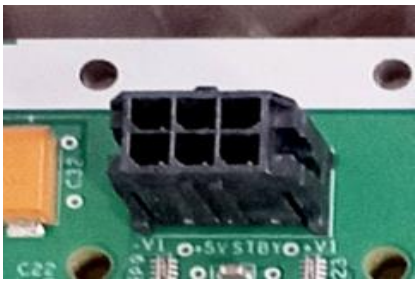
The special signals to the power supply unit and external connectors are brought out to a separate connector on the backplanes. Depending on the backplane type, a 6-pin, a 10-pin or a 14-pin connector with a contact spacing of 1.25 mm and 3mm is used.

- **J5-CONN**, SMT, WTB, 1.25mm, WAFER, 180 DEGREE Header, Vertical, 6 Circuits, assembled on all VME /VME64x backplanes, Amphenol ICC (10114828-11106LF).
- **J4-Auxiliary power Input** -Micro-Fit CPI Header, Dual Row, Vertical, 6 Circuits, Tin (Sn) Plating, Press-fit, Molex (449140601).

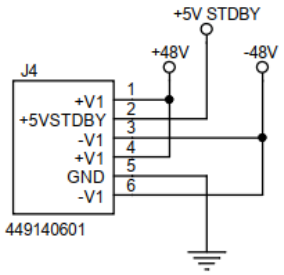


J5 CONNECTOR	
J5.1	SYSFAIL*
J5.2	SYSRESET*
J5.3	ACFAIL*
J5.4	GND
J5.5	+12V
J5.6	-12V





J4 CONNECTOR	
J4.1	+V1
J4.2	+5VSTDBY
J4.3	-V1
J4.4	+V1
J4.5	GND
J4.6	-V1



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Pin Assignments:

Pin Assignments - Geographical Address (VME64x)

Slot Number	GAP* Pin J1-D9	GA4* Pin J1-D17	GA3* Pin J1-D15	GA2* Pin J1-D13	GA1* Pin J1-D11	GA0* Pin J1-D10
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

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Pin Assignments:

Pin Assignments J0

Pin	ROW Z	ROW A	ROW B	ROW C	ROW D	ROW E	ROW F
1	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND
2	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND
3	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND
4	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND
5	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND
6	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND
7	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND
8	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND
9	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND
10	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND
11	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND
12	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND
13	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND
14	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND
15	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND
16	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND
17	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND
18	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND
19	GND	User Defined	User Defined	User Defined	User Defined	User Defined	GND

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Pin Assignments:

Pin Assignments J1

Pin	ROW Z		ROW A VME	ROW B VME	ROW C VME	ROW D	
	VME64x	VME64				VME64	VME64x
1	MPR	Reserved	D00	BBSY*	D08	Reserved	VPC
2	GND	GND	D01	BCLR*	D09	Reserved	GND
3	MCLK	Reserved	D02	ACFAIL*	D10	Reserved	+V1
4	GND	GND	D03	BG0IN*	D11	Reserved	+V2
5	MSD	Reserved	D04	BG0OUT*	D12	Reserved	RsvU-1
6	GND	GND	D05	BG1IN*	D13	Reserved	-V1
7	MMD	Reserved	D06	BG1OUT*	D14	Reserved	-V2
8	GND	GND	D07	BG2IN*	D15	Reserved	RsvU-2
9	MCTL	Reserved	GND	BG2OUT*	GND	Reserved	GAP*
10	GND	GND	SYSCLK	BG3IN*	SYSFAIL*	Reserved	GA0*
11	RTRY1*	Reserved	GND	BG3OUT*	BERR*	Reserved	GA1*
12	GND	GND	DS1*	BR0*	SYSRESET*	Reserved	+3.3 V
13	RsvBus1	Reserved	DS0*	BR1*	LWORD*	Reserved	GA2*
14	GND	GND	WRITE*	BR2*	AM5	Reserved	+3.3 V
15	RsvBus2	Reserved	GND	BR3*	A23	Reserved	GA3*
16	GND	GND	DTACK*	AM0	A22	Reserved	+3.3 V
17	RsvBus3	Reserved	GND	AM1	A21	Reserved	GA4*
18	GND	GND	AS*	AM2	A20	Reserved	+3.3 V
19	RsvBus4	Reserved	GND	AM3	A19	Reserved	RsvBus5
20	GND	GND	IACK*	GND	A18	Reserved	+3.3 V
21	RsvBus6	Reserved	IACKIN*	SERCLK	A17	Reserved	RsvBus7
22	GND	GND	IACKOUT*	SERDAT*	A16	Reserved	+3.3 V
23	RsvBus8	Reserved	AM4	GND	A15	Reserved	RsvBus9
24	GND	GND	A07	IRQ7*	A14	Reserved	+3.3 V
25	RsvBus10	Reserved	A06	IRQ6*	A13	Reserved	RsvBus11
26	GND	GND	A05	IRQ5*	A12	Reserved	+3.3 V
27	RsvBus12	Reserved	A04	IRQ4*	A11	Reserved	LIN*
28	GND	GND	A03	IRQ3*	A10	Reserved	+3.3 V
29	SBB	Reserved	A02	IRQ2*	A09	Reserved	LIN0*
30	GND	GND	A01	IRQ1*	A08	Reserved	+3.3 V
31	SBA	Reserved	-12 V	+5 V STDBY	+12 V	Reserved	GND
32	GND	GND	+5 V	+5 V	+5 V	Reserved	VPC

* low-active

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Pin Assignments:

Pin Assignments J2

Pin	ROW Z		ROW A VME	ROW B VME	ROW C VME	ROW D	
	VME64x	VME64				VME64	VME64x
1	User Defined	Reserved	User Defined	+5 V	User Defined	Reserved	User Defined
2	GND	GND	User Defined	GND	User Defined	Reserved	User Defined
3	User Defined	Reserved	User Defined	RETRY*	User Defined	Reserved	User Defined
4	GND	GND	User Defined	A24	User Defined	Reserved	User Defined
5	User Defined	Reserved	User Defined	A25	User Defined	Reserved	User Defined
6	GND	GND	User Defined	A26	User Defined	Reserved	User Defined
7	User Defined	Reserved	User Defined	A27	User Defined	Reserved	User Defined
8	GND	GND	User Defined	A28	User Defined	Reserved	User Defined
9	User Defined	Reserved	User Defined	A29	User Defined	Reserved	User Defined
10	GND	GND	User Defined	A30	User Defined	Reserved	User Defined
11	User Defined	Reserved	User Defined	A31	User Defined	Reserved	User Defined
12	GND	GND	User Defined	GND	User Defined	Reserved	User Defined
13	User Defined	Reserved	User Defined	+5 V	User Defined	Reserved	User Defined
14	GND	GND	User Defined	D16	User Defined	Reserved	User Defined
15	User Defined	Reserved	User Defined	D17	User Defined	Reserved	User Defined
16	GND	GND	User Defined	D18	User Defined	Reserved	User Defined
17	User Defined	Reserved	User Defined	D19	User Defined	Reserved	User Defined
18	GND	GND	User Defined	D20	User Defined	Reserved	User Defined
19	User Defined	Reserved	User Defined	D21	User Defined	Reserved	User Defined
20	GND	GND	User Defined	D22	User Defined	Reserved	User Defined
21	User Defined	Reserved	User Defined	D23	User Defined	Reserved	User Defined
22	GND	GND	User Defined	GND	User Defined	Reserved	User Defined
23	User Defined	Reserved	User Defined	D24	User Defined	Reserved	User Defined
24	GND	GND	User Defined	D25	User Defined	Reserved	User Defined
25	User Defined	Reserved	User Defined	D26	User Defined	Reserved	User Defined
26	GND	GND	User Defined	D27	User Defined	Reserved	User Defined
27	User Defined	Reserved	User Defined	D28	User Defined	Reserved	User Defined
28	GND	GND	User Defined	D29	User Defined	Reserved	User Defined
29	User Defined	Reserved	User Defined	D30	User Defined	Reserved	User Defined
30	GND	GND	User Defined	D31	User Defined	Reserved	User Defined
31	User Defined	Reserved	User Defined	GND	User Defined	Reserved	GND
32	GND	GND	User Defined	+5 V	User Defined	Reserved	VPC

* low-active

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Amphenol-BSI VME64x 6U 12 slot Manual

Technical Data	VME64	VME64x
Base Material	Fiberglass epoxide acc. to DIN 40802 (type FR4)	Fiberglass epoxide acc. to DIN 40802 (type FR4) –IT180A
Layer structure	Optimized for best HF behavior. Outer layers designed as shielding areas.	Optimized for best HF behavior. Outer layers designed as shielding areas.
Ohmic resistance of signal lines	< 1.5 Ω	< 1.5 Ω
PCB thickness	3.2 – 4.0 mm	3.2 – 5.0 mm
Impedance Z of signal lines	60 Ω	55 Ω
Basic power consumption, both ends terminated	Active: < 0.1 A Passive: < 1.5 A	Active: < 0.1 A Passive: < 1.5 A
Power supply connection	30A	30A
Termination ON/IN board	Passive or Active	Passive or Active
Installation height	3 U/6 U	3 U/6 U/7U /9U
Slot spacing	4 HP (different slot spacing upon request)	4 HP (different slot spacing upon request)
Connectors	Press-fit quality class 2 160 pins 160 pins compatible with C96	Press-fit quality class 2 160 pins 160 pins compatible with C96 Optionally J0, 2 mm 95 / 133 pins
Operating temperature range	(-40°C to 85°C)	(-40°C to 85°C)
Relative humidity	95 %, noncondensing	95 %, noncondensing

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