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TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

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Full-service, independent repair center
with experienced engineers and technicians on staff.

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along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
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- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

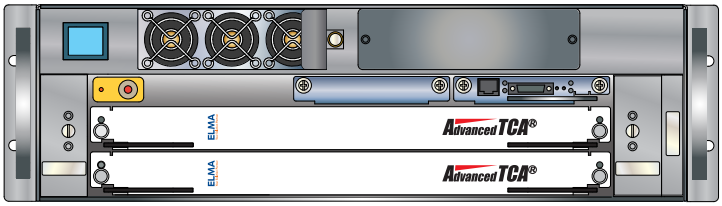
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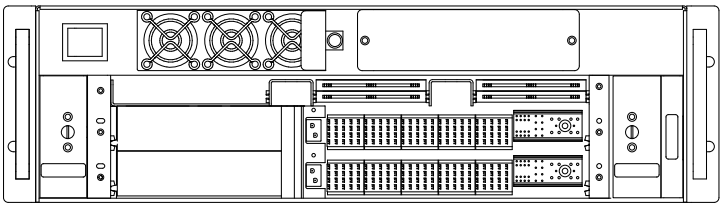
Find the *Elma 11C08ADX78Y3VG4X* at our website: *Click HERE*

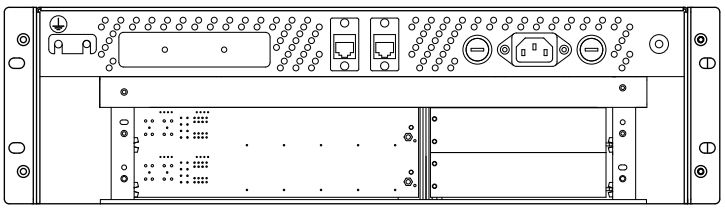
ATCA SYSTEM PLATFORM



3U • 19″ RACKMOUNT • AC

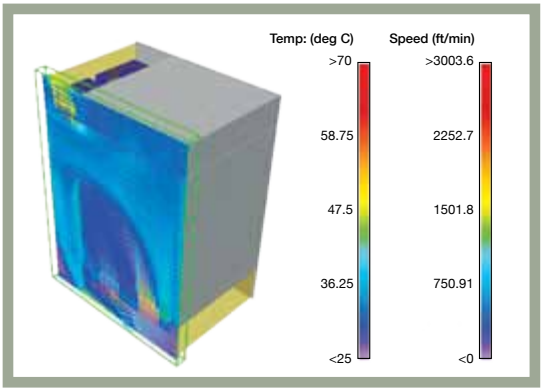




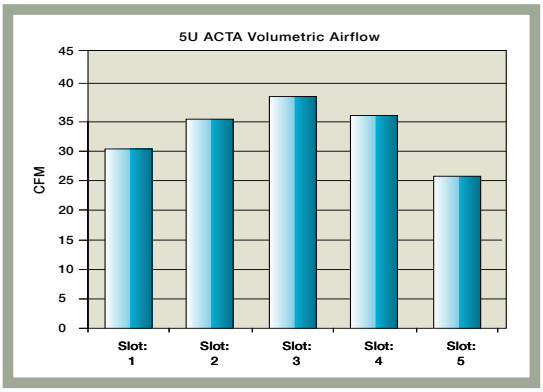


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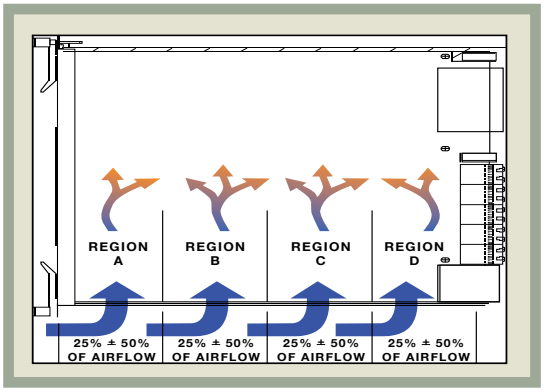
ELMA
Your Solution Partner



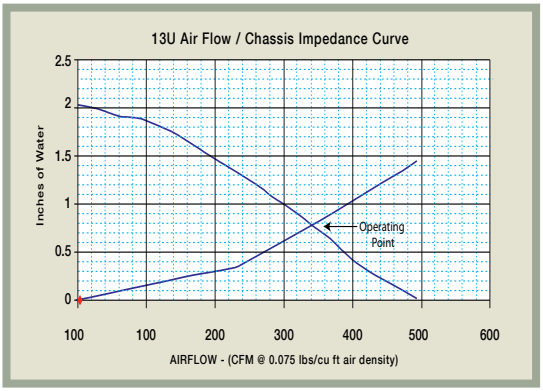
New 12U ATCA with TRM r5



5U ATCA Volumetric Airflow



13U Even Airflow Distribution



13U Airflow / Chasis Impedance Curve

THERMAL SIMULATIONS

Elma's Thermal Simulation can be extremely helpful in coming up with an optimal ATCA chassis cooling solution. Elma can simulate specif cally how your boards interact with the chassis in regards to the cooling. After modeling your card, Elma's designers can verify the cooling and make sure the hotter components of the card are placed in cooler parts of the chassis. If the per slot loading is provided, thermal simulation could be performed where baffles or extra fans could be added to ensure proper cooling for all boards.

Using CFD-based (Computation Fluid Dynamics) thermal modeling software like FlowTherm, Elma can change the intake and exhaust areas, change fans and fan configuration, add and optimize baffling and monitor the temperature at critical locations before fabricating and testing a chassis. Simulation can help determine the proper fans to use in order to ensure proper chassis cooling as well as keeping the audible noise level at a minimum. Locating hot spots in the chassis, the designer can simulate options to rectify the situation. For example, a baffle can be placed in a particular area to direct airflow, or changing a fan's position to increase or decrease the air plenum. A different type of fan or blower can also be used to improve the results. Simulation can also help maximize the usefulness of the shelf managers. Thermal analysis can show how a shelf manager can tie or group fans together to optimize airflow when it senses a problem. It can also help determine the ideal sequence in timing solution for shutting down cards, which signals to send, and when it is absolutely necessary to shut down the entire system. Contact Elma at (510) 656-3400 for more information on our Thermal Simulation services.

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AdvancedTCA Order Key

11A ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑

❑❑ NUMBER OF SLOTS BP
- 00-21: Single BP; AY-YA: Split
- 02 = 2 slot
- 05 = 5 slot
- 06 = 6 slot
- 14 = 14 slot

❑ BP BARE BOARD
- E = 1 x SM
- F = 2 x SM (Bussed IPMB)
- G = 2 x SM (Radial IPMB)
- Z = Custom

❑ FABRIC ARCHITECTURE
- F = Star
- G = Dual Star
- H = Mesh
- J = Replicated Mesh
- Z = Custom

❑ COOLING
- A = 1 x Tray (plug in)
- B = 2 x Tray (plug in)
- C = 3 x Tray (Plug in)
- Z = Custom

❑ HEIGHT
- 1 = 1U
- 2 = 2U
- 4 = 4U
- 5 = 5U
- C = 12U
- D = 13U

❑ WIDTH
- 8 = 84 T
- E = ETSI

❑ REAR I/O
- N = No
- Y = Yes

❑ DEPTH
- 2 = 200 - 299mm
- 3 = 300 - 399mm
- 4 = 400 - 499mm

❑ CARD ORIENTATION
- V = Vertical
- H = Horizontal

❑ PSU INPUT
- C = 90 - 230VAC (Fixed)
- G = 90 - 230VAC (Plug-in)
- H = 48VDC
- M = Dual 48VDC
- N = Quad 48VDC
- P = 90-230VAC(2 x HS, N+1)
- Q = 90-230VAC(3 x HS, N+1)
- X = No PSU

❑ PSU OUTPUT
(NOT ALL PSU COMBINATIONS AVAILABLE)
- 2 = 200 - 299 watts
- 3 = 300 - 399 watts
- 4 = 400 - 499 watts
- 5 = 500 - 599 watts
- 6 = 600 - 699 watts
- 8 = 800 - 899 watts
- A = 1000 - 1199 watts
- B = 1200 - 1299 watts
- C = 1600 - 1799 watts
- D = 1800 - 1999 watts
- E = 2000 - 2199 watts
- F = 2200 - 2399 watts
- G = 2400 - 2599 watts
- H = 2600 - 2799 watts
- X = Not Installed

❑ SHELF MANAGER (Installed)
- R = 1 x Fixed
- S = 1 x Plug in
- D = 2 x Plug in
- X = Not Installed

AdvancedTCA, 2U - 19" Rackmount
DC



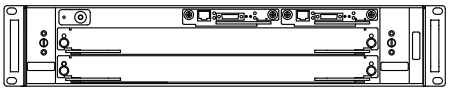
FEATURES:

- 2U high
- Holds 2 ATCA cards
- 2 slot Replicated mesh backplane
- Rear I/O
- Dual Shelf Managers
- Dual removable fan trays
- 250 watts/slot cooling
- Dual 48VDC input
- NEBS compliant removable air filter

SCOPE OF SUPPLY

High quality 19" rackmount chassis platform consisting of pre-galvanized steel enclosures painted black: high performance PICMG 3.0 backplane, power supply, PEM (DC); cooling system and DC power components. Assembled, wired and tested prior to shipment.

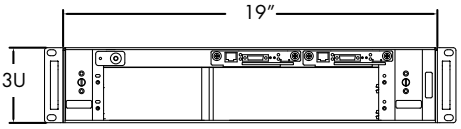
ORDERING INFORMATION



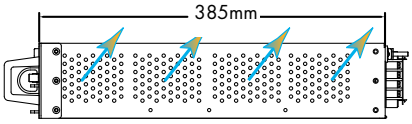
Description	Order Number
■ 2U H x 19" W x 385mm D ■ Holds two, 8U x 280mm blades ■ Redundant plug-in fan trays ■ 2 Slot Replicated Mesh backplane ■ Provision for dual Shelf Manager (not installed) ■ Dual 48 VDC PEM inputs	11A02FJB28Y3HMXX

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LINE DRAWINGS

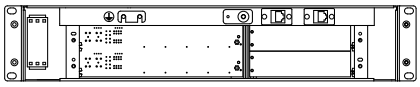


Front View



Air Flow - Side to Side

Side View



Rear View

ENVIRONMENTAL

	Operating	Storage / Transit
Temperature:	0°C to +50°C	-20°C to +70°C
Altitude:	6000 ft. (1,829m)	50,000 ft. (15,240m)
Humidity:	5% to 95% Non condensing	5% to 95% Non condensing
Shock:	10 Gs @ 11ms	15 Gs @ 11ms (per ASTM 0775)
Vibration:	1.0 Gs @ 10 to 330 Hz	1.2 Gs @ 5 to 330 Hz
Agencies:	Designed to meet UL 1950, FCC Class A or B, CE	

CUSTOM CONFIGURATIONS

11A ❑❑❑❑❑ 2 8 ❑ 3 H ❑❑❑

❑❑ NUMBER OF SLOTS BP
00-21: Single BP; AY-YA: Split
02 = 2 slot

❑ BP BARE BOARD
E = 1 x SM
F = 2 x SM (Bussed IPMB)
G = 2 x SM (Radial IPMB)
Z = Custom

❑ FABRIC ARCHITECTURE
G = Dual Star
H = Mesh
J = Replicated Mesh
Z = Custom

❑ COOLING
A = 1 x Tray (plug in)
B = 2 x Tray (plug in)
Z = Custom

❑ HEIGHT
2 = 2U

❑ WIDTH
8 = 84 T

❑ REAR I/O
N = No
Y = Yes

❑ DEPTH
3 = 300 - 399mm

❑ CARD ORIENTATION
H = Horizontal

❑ PSU INPUT
C = 90 - 230VAC (Fixed)
H = 48VDC
M = Dual 48VDC
X = No PSU

❑ PSU OUTPUT
(NOT ALL PSU COMBINATIONS AVAILABLE)
2 = 200 - 299 watts
3 = 300 - 399 watts
4 = 400 - 499 watts
5 = 500 - 599 watts
X = Not Installed

❑ SHELF MANAGER (Installed)
R = 1 x Fixed
S = 1 x Plug in
D = 2 x Plug in
X = Not Installed

*NOTE: Elma's radial IPMB signals are radially connected across the backplane to the Shelf ManagerCarrier Card. The Shmm 500 IPM module resides on the carrier card where these connections are bussed.

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AdvancedTCA, 3U - 19" Rackmount

AC



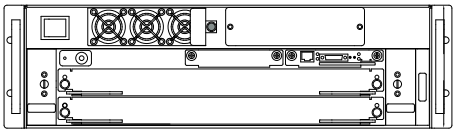
FEATURES:

- 3U High 19" Rack mount
- Depth 16" (407mm)
- 2 Slot ATCA backplane
- Two blade slots (8Ux280mm)
- Two RTM board slots (8Ux80mm)
- Dual shelf manager capability
- Dual fan trays, push/pull configuration
- Air filter tray
- Dual plug-in 1200W Power supply (optional)
- 2 Slot Replicated mesh backplane

SCOPE OF SUPPLY

High quality 19" rackmount chassis platform consisting of pre-galvanized steel enclosures painted black: high performance PICMG 3.0 backplane, power supply (AC), cooling system and AC/DC power components. Assembled, wired and tested prior to shipment.

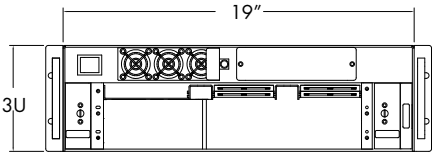
ORDERING INFORMATION



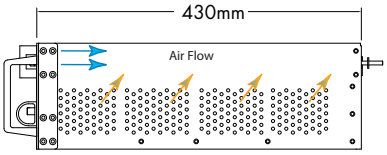
Description	Order Number
■ 3U H x 19" W x 403mm D ■ Holds two, 8U x 280mm blades ■ Holds two, 8U x 80mm, Rear I/O ■ Redundant plug-in fan trays ■ 2 slot replicated mesh backplane ■ Provision for dual Shelf Manager (not installed) ■ 1 x 1200w, AC input PSU (n+1 optional)	11A02FJB38Y4HGBX

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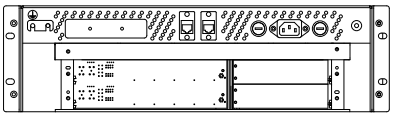
LINE DRAWINGS



Front View



Side View



Rear View

ENVIRONMENTAL

	Operating	Storage / Transit
Temperature:	0°C to +50°C	-20°C to +70°C
Altitude:	6000 ft. (1,829m)	50,000 ft. (15,240m)
Humidity:	5% to 95% Non condensing	5% to 95% Non condensing
Shock:	10 Gs @ 11ms	15 Gs @ 11ms (per ASTM 0775)
Vibration:	1.0 Gs @ 10 to 330 Hz	1.2 Gs @ 5 to 330 Hz
Agencies:	Designed to meet UL 1950, FCC Class A or B, CE	

CUSTOM CONFIGURATIONS

11A ❑ ❑ ❑ ❑ ❑ 3 8 Y 4 H ❑ B ❑

❑❑ NUMBER OF SLOTS BP
00-21: Single BP; AY-YA: Split
02 = 2 slot
05 = 5 slot
06 = 6 slot
14 = 14 slot

❑ BP BARE BOARD
E = 1 x SM
F = 2 x SM (Bussed IPMB)
G = 2 x SM (Radial IPMB)
Z = Custom

❑ FABRIC ARCHITECTURE
F = Star
G = Dual Star
H = Mesh
J = Replicated Mesh
Z = Custom

❑ COOLING
A = 1 x Tray (plug in)
B = 2 x Tray (plug in)
C = 3 x Tray (Plug in)
Z = Custom

❑ HEIGHT
1 =1U
2 = 2U
4 = 4U
5 = 5U
C = 12U
D = 13U

❑ WIDTH
8 = 84 T
E = ETSI

❑ REAR I/O
N = No
Y = Yes

❑ DEPTH
2 = 200 - 299mm
3 = 300 - 399mm
4 = 400 - 499mm

❑ CARD ORIENTATION
V = Vertical
H = Horizontal

❑ PSU INPUT
C = 90 - 230VAC (Fixed)
G = 90 - 230VAC (Plug-in)
H = 48VDC
M = Dual 48VDC
N = Quad 48VDC
P = 90-230VAC(2 x HS, N+1)
Q = 90-230VAC(3 x HS, N+1)
X = No PSU

❑ PSU OUTPUT
(NOT ALL PSU COMBINATIONS AVAILABLE)
2 = 200 - 299 watts
3 = 300 - 399 watts
4 = 400 - 499 watts
5 = 500 - 599 watts
6 = 600 - 699 watts
8 = 800 - 899 watts
A = 1000 - 1199 watts
B = 1200 - 1299 watts
C = 1600 - 1799 watts
D = 1800 - 1999 watts
E = 2000 - 2199 watts
F = 2200 - 2399 watts
G = 2400 - 2599 watts
H = 2600 - 2799 watts
X = Not Installed

❑ SHELF MANAGER (Installed)
R = 1 x Fixed
S = 1 x Plug in
D = 2 x Plug in
X = Not Installed

*NOTE: Elma's radial IPMB signals are radially connected across the backplane to the Shelf ManagerCarrier Card. The Shmm 500 IPM module resides on the carrier card where these connections are bussed.

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AdvancedTCA, 4U - 19" Rackmount
DC



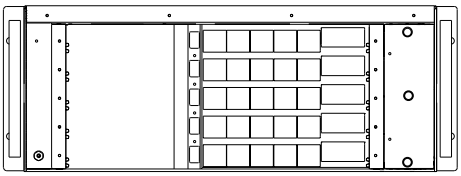
FEATURES:

- Compliant to PICMG 3.0 specification
- 4U x 444mm x 385mm (H x W x D)
- 5 slot replicated mesh backplane
- Cooling side to side (2 x 170 CFM fans)
- Plug removable fan tray
- Dual 48VDC input terminals
- Front and rear ESD jack
- Shelf manager optional
- Customization available

SCOPE OF SUPPLY

High quality 19" rackmount chassis platform consisting of pre-galvanized steel enclosures painted black: high performance PICMG 3.0 backplane, power supply, PEM (DC); cooling system and DC power components. Assembled, wired and tested prior to shipment.

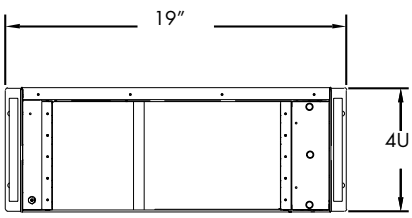
ORDERING INFORMATION



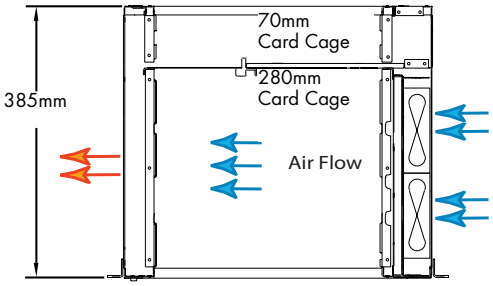
Description	Order Number
■ 4U H x 19" W x 385mm D ■ Holds 5, 8U x 280mm blades ■ Holds 5, 8U x 70mm, rear I/O ■ 5 Slot Replicated Mesh backplane ■ 2 x 170 CFM Fans ■ Shelf Manager not installed ■ Dual 48VDC input	11A05GJA48Y3HMXX

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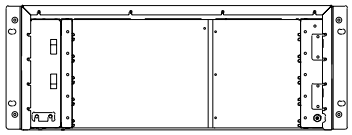
LINE DRAWINGS



Front View



Top View



Rear View

ENVIRONMENTAL

	Operating	Storage / Transit
Temperature:	0°C to +50°C	-20°C to +70°C
Altitude:	6000 ft. (1,829m)	50,000 ft. (15,240m)
Humidity:	5% to 95% Non condensing	5% to 95% Non condensing
Shock:	10 Gs @ 11ms	15 Gs @ 11ms (per ASTM 0775)
Vibration:	1.0 Gs @ 10 to 330 Hz	1.2 Gs @ 5 to 330 Hz
Agencies:	Designed to meet UL 1950, FCC Class A or B, CE	

CUSTOM CONFIGURATIONS

11A ❑❑❑❑❑ 4 8 ❑ 3 H ❑❑❑

❑❑ NUMBER OF SLOTS BP
00-21: Single BP; AY-YA: Split
05 = 5 slot

❑ BP BARE BOARD
E = 1 x SM
F = 2 x SM (Bussed IPMB)
G = 2 x SM (Radial IPMB)
Z = Custom

❑ FABRIC ARCHITECTURE
G = G = Dual Star
H = H = Mesh
J = J = Replicated Mesh
Z = Custom

❑ COOLING
A = A = 1 x Tray (plug in)
B = B = 2 x Tray (plug in)
Z = Custom

❑ HEIGHT
4 = 4U

❑ WIDTH
8 = 84 T

❑ REAR I/O
N = No
Y = Yes

❑ DEPTH
3 = 300 - 399mm

❑ CARD ORIENTATION
H = Horizontal

❑ PSU INPUT
H = 48VDC
M = Dual 48VDC
X = No PSU

❑ PSU OUTPUT
(NOT ALL PSU COMBINATIONS AVAILABLE)
X = Not Installed
Y = Other

❑ SHELF MANAGER (Installed)
R = 1 x Fixed
S = 1 x Plug in
D = 2 x Plug in
X = Not Installed

*NOTE: Elma's radial IPMB signals are radially connected across the backplane to the Shelf ManagerCarrier Card. The Shmm 500 IPM module resides on the carrier card where these connections are bussed.

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AdvancedTCA, 5U - 19" Rackmount
AC



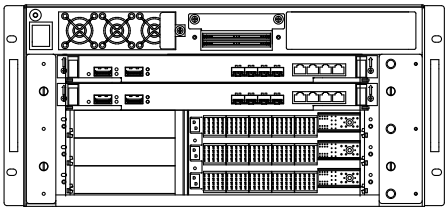
FEATURES:

- 5U high
- Holds 5 ATCA blades
- 5 slot replicated mesh backplane
- RTM (with cooling)
- Dual Shelf Managers
- Dual removable fan trays
- 250 watts/slot cooling
- 1200 Watt, AC input PSU (N+1 optional)
- NEBS compliant removable air filter

SCOPE OF SUPPLY

High quality 19" rackmount chassis platform consisting of pre-galvanized steel enclosures painted black: high performance PICMG 3.0 backplane, power supply (AC); cooling system and AC/DC power components. Assembled, wired and tested prior to shipment.

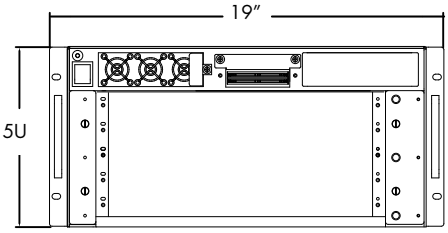
ORDERING INFORMATION



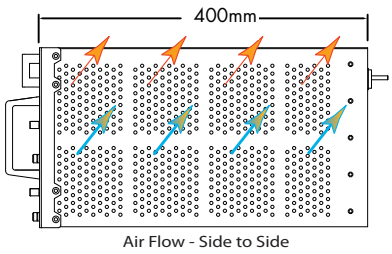
Description	Order Number
■ 5UH x 19" W x 400mm D ■ Holds 5, 8U x 280mm blades ■ Holds 5, 8U x 80mm cards, rear I/O ■ Redundant plug-in fan tray ■ 5 slot replicated mesh backplane ■ Provision for dual Shelf Manager (not installed) ■ 1 x1200w, AC input PSU, (N+1 optional)	11A05FJB58Y4HGBX

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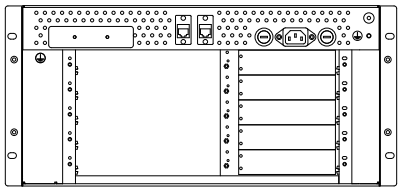
LINE DRAWINGS



Front View



Side View



Rear View

ENVIRONMENTAL

	Operating	Storage / Transit
Temperature:	0°C to +50°C	-20°C to +70°C
Altitude:	6000 ft. (1,829m)	50,000 ft. (15,240m)
Humidity:	5% to 95% Non condensing	5% to 95% Non condensing
Shock:	10 Gs @ 11ms	15 Gs @ 11ms (per ASTM 0775)
Vibration:	1.0 Gs @ 10 to 330 Hz	1.2 Gs @ 5 to 330 Hz
Agencies:	Designed to meet UL 1950, FCC Class A or B, CE	

CUSTOM CONFIGURATIONS

11A ❑ ❑ ❑ ❑ ❑ 5 8 ❑ 3 H ❑ ❑ ❑

❑❑ NUMBER OF SLOTS BP
00-21: Single BP; AY-YA: Split
05 = 5 slot

❑ BP BARE BOARD
F = 2 x SM (Bussed IPMB)
G = 2 x SM (Radial IPMB)
Z = Custom

❑ FABRIC ARCHITECTURE
G = Dual Star
H = Mesh
J = Replicated Mesh
Z = Custom

❑ COOLING
A = 1 x Tray (plug in)
B = 2 x Tray (plug in)
Z = Custom

❑ HEIGHT
5 = 5U

❑ WIDTH
8 = 84 T

❑ REAR I/O
N = No
Y = Yes

❑ DEPTH
4 = 400 - 499mm

❑ CARD ORIENTATION
H = Horizontal

❑ PSU INPUT
C = 90 - 230VAC (Fixed)
G = 90 - 230VAC (Plug-in)
H = 48VDC
M = Dual 48VDC
P = 90-230VAC(2 x HS, N+1)
X = No PSU

❑ PSU OUTPUT
(NOT ALL PSU COMBINATIONS AVAILABLE)
2 = 200 - 299 watts
3 = 300 - 399 watts
4 = 400 - 499 watts
5 = 500 - 599 watts
6 = 600 - 699 watts
8 = 800 - 899 watts
A = 1000 - 1199 watts
B = 1200 watt
X = Not Installed

❑ SHELF MANAGER (Installed)
R = 1 x Fixed
S = 1 x Plug in
D = 2 x Plug in
X = Not Installed

*NOTE: Elma's radial IPMB signals are radially connected across the backplane to the Shelf ManagerCarrier Card. The Shmm 500 IPM module resides on the carrier card where these connections are bussed.

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AdvancedTCA, 5U - 19" Rackmount
DC



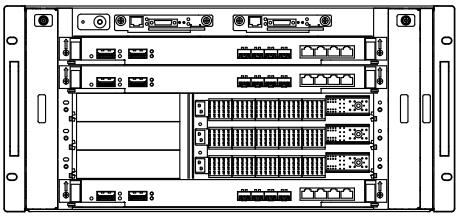
FEATURES:

- 5U high
- Holds 6 ATCA cards
- 6 slot replicated mesh backplane
- RTM (with cooling)
- Dual Shelf Managers
- Dual removable fan trays
- 250 watts/slot cooling
- Dual 48VDC input
- NEBS compliant removable air filter

SCOPE OF SUPPLY

High quality 19" rackmount chassis platform consisting of pre-galvanized steel enclosures painted black: high performance PICMG 3.0 backplane, power supply (DC); cooling system and AC/DC power components. Assembled, wired and tested prior to shipment.

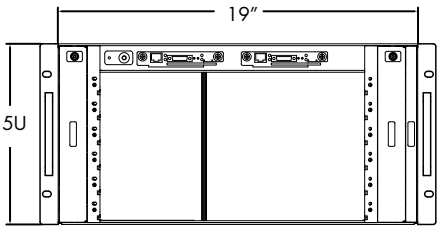
ORDERING INFORMATION



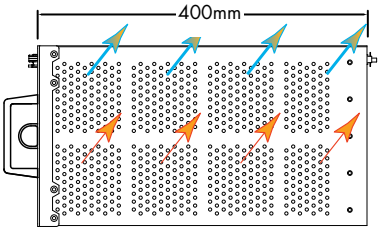
Description	Order Number
■ 5UH x 19" W x 400mm D ■ Holds 6, 8U x 280mm cards ■ Holds 6, 8U x 80mm cards, rear I/O ■ Redundant plug-in fan tray ■ 6 slot replicated mesh backplane ■ Provision for dual Shelf Manager (not installed) ■ Dual 48VDC PEMs	11A06FGB58Y4HMXX

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LINE DRAWINGS

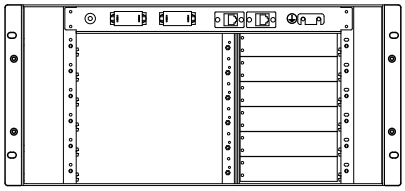


Front View



Air Flow - Side to Side

Side View



Rear View

ENVIRONMENTAL

	Operating	Storage / Transit
Temperature:	0°C to +50°C	-20°C to +70°C
Altitude:	6000 ft. (1,829m)	50,000 ft. (15,240m)
Humidity:	5% to 95% Non condensing	5% to 95% Non condensing
Shock:	10 Gs @ 11ms	15 Gs @ 11ms (per ASTM 0775)
Vibration:	1.0 Gs @ 10 to 330 Hz	1.2 Gs @ 5 to 330 Hz
Agencies:	Designed to meet UL 1950, FCC Class A or B, CE	

CUSTOM CONFIGURATIONS

11A ❑ ❑ ❑ ❑ ❑ 5 8 Y 4 H M X ❑

❑❑ NUMBER OF SLOTS BP
00-21: Single BP; AY-YA: Split
05 = 5 slot

❑ BP BARE BOARD
F = 2 x SM (Bussed IPMB)
G = 2 x SM (Radial IPMB)
Z = Custom

❑ FABRIC ARCHITECTURE
G = Dual Star
H = Mesh
J = Replicated Mesh
Z = Custom

❑ COOLING
A = 1 x Tray (plug in)
B = 2 x Tray (plug in)
Z = Custom

❑ HEIGHT
5 = 5U

❑ WIDTH
8 = 84 T

❑ REAR I/O
N = No
Y = Yes

❑ DEPTH
4 = 400 - 499mm

❑ CARD ORIENTATION
H = Horizontal

❑ PSU INPUT
C = 90 - 230VAC (Fixed)
G = 90 - 230VAC (Plug-in)
H = 48VDC
M = Dual 48VDC
P = 90-230VAC(2 x HS, N+1)
X = No PSU

❑ PSU OUTPUT
(NOT ALL PSU COMBINATIONS AVAILABLE)
2 = 200 - 299 watts
3 = 300 - 399 watts
4 = 400 - 499 watts
5 = 500 - 599 watts
6 = 600 - 699 watts
8 = 800 - 899 watts
A = 1000 - 1199 watts
B = 1200 watt
X = Not Installed

❑ SHELF MANAGER (Installed)
R = 1 x Fixed
S = 1 x Plug in
D = 2 x Plug in
X = Not Installed

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AdvancedTCA, 6U - 19" Rackmount

AC



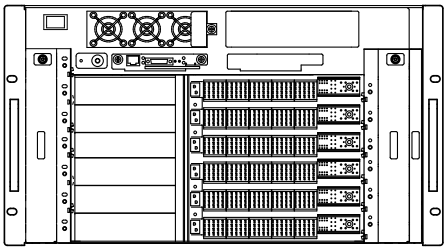
FEATURES:

- 6U high
- Holds 6 ATCA cards
- 6 slot replicated mesh backplane
- RTM (with cooling)
- Dual Shelf Managers
- Dual removable fan trays
- 250 watts/slot cooling
- 1200 watt, AC input PSU (N+1 optional)
- NEBS compliant removable air filter

SCOPE OF SUPPLY

High quality 19" rackmount chassis platform consisting of pre-galvanized steel enclosures painted black: high performance PICMG 3.0 backplane, power supply, (AC) or PEM (DC); cooling system and AC/DC power components. Assembled, wired and tested prior to shipment.

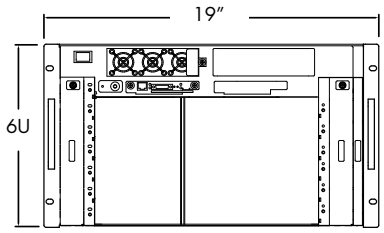
ORDERING INFORMATION



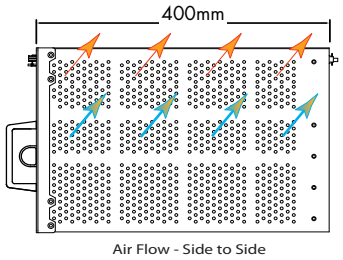
Description	Order Number
■ 6 U H x 19" W x 400mm D ■ Holds 6, 8U x 280mm blades ■ Holds 6, 8U x 80mm cards, rear I/O ■ Redundant plug-in fan tray ■ 6 slot replicated mesh backplane ■ Provision for dual Shelf Manager (not installed) ■ 1 x1200w, AC input PSU, (N+1 optional)	11A06FJB68Y4HGBX

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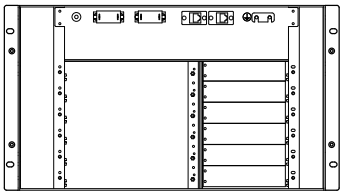
LINE DRAWINGS



Front View



Side View



Rear View

ENVIRONMENTAL

	Operating	Storage / Transit
Temperature:	0°C to +50°C	-20°C to +70°C
Altitude:	6000 ft. (1,829m)	50,000 ft. (15,240m)
Humidity:	5% to 95% Non condensing	5% to 95% Non condensing
Shock:	10 Gs @ 11ms	15 Gs @ 11ms (per ASTM 0775)
Vibration:	1.0 Gs @ 10 to 330 Hz	1.2 Gs @ 5 to 330 Hz
Agencies:	Designed to meet UL 1950, FCC Class A or B, CE	

CUSTOM CONFIGURATIONS

11A ❑ ❑ ❑ ❑ ❑ 6 8 Y 4 H ❑ B ❑

❑❑ NUMBER OF SLOTS BP
00-21: Single BP; AY-YA: Split
02 = 2 slot
05 = 5 slot
06 = 6 slot
14 = 14 slot

❑ BP BARE BOARD
E = 1 x SM
F = 2 x SM (Bussed IPMB)
G = 2 x SM (Radial IPMB)
Z = Custom

❑ FABRIC ARCHITECTURE
F = Star
G = Dual Star
H = Mesh
J = Replicated Mesh
Z = Custom

❑ COOLING
A = 1 x Tray (plug in)
B = 2 x Tray (plug in)
C = 3 x Tray (Plug in)
Z = Custom

❑ HEIGHT
1 =1U
2 = 2U
4 = 4U
5 = 5U
C = 12U
D = 13U

❑ WIDTH
8 = 84 T
E = ETSI

❑ REAR I/O
N = No
Y = Yes

❑ DEPTH
4 = 400 - 499mm

❑ CARD ORIENTATION
V = Vertical
H = Horizontal

❑ PSU INPUT
C = 90 - 230VAC (Fixed)
G = 90 - 230VAC (Plug-in)
H = 48VDC
M = Dual 48VDC
N = Quad 48VDC
P = 90-230VAC(2 x HS, N+1)
Q = 90-230VAC(3 x HS, N+1)
X = No PSU

❑ PSU OUTPUT
(NOT ALL PSU COMBINATIONS AVAILABLE)
2 = 200 - 299 watts
3 = 300 - 399 watts
4 = 400 - 499 watts
5 = 500 - 599 watts
6 = 600 - 699 watts
8 = 800 - 899 watts
A = 1000 - 1199 watts
B = 1200 - 1299 watts
C = 1600 - 1799 watts
D = 1800 - 1999 watts
E = 2000 - 2199 watts
F = 2200 - 2399 watts
G = 2400 - 2599 watts
H = 2600 - 2799 watts
X = Not Installed

❑ SHELF MANAGER (Installed)
R = 1 x Fixed
S = 1 x Plug in
D = 2 x Plug in
X = Not Installed

*NOTE: Elma's radial IPMB signals are radially connected across the backplane to the Shelf ManagerCarrier Card. The Shmm 500 IPM module resides on the carrier card where these connections are bussed.

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AdvancedTCA, 13U - 19" Rackmount
DC



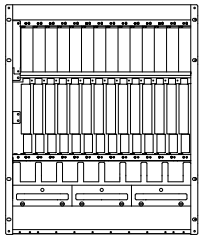
FEATURES:

- 13U high
- Holds 14 ATCA blades
- 14 slot dual star or full mesh backplane
- RTM (with 40 way slot cooling)
- Dual Shelf Managers
- Quad redundant 48VDC input
- 3 x removable fan trays
- 300 watts/slot cooling
- NEBS compliant removable air filter

SCOPE OF SUPPLY

High quality 19" rackmount chassis platform consisting of pre-galvanized steel enclosures painted black: high performance PICMG 3.0 backplane, dual PEM (DC); cooling system and DC power components. Assembled, wired and tested prior to shipment.

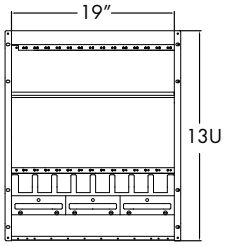
ORDERING INFORMATION



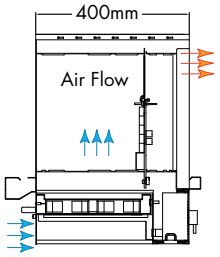
Description	Order Number
■ 13 U H x 19" W x 400mm D ■ Holds 14, 8U x 280mm blades ■ Holds 14, 8U x 80mm cards, rear I/O ■ 3 x removable fan trays ■ 14 slot dual star backplane ■ Provision for dual Shelf Manager (not installed) ■ Quad 48VDC PEMs	11A14FGCD8Y4VNXX

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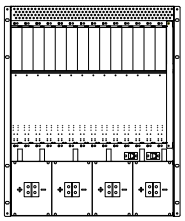
LINE DRAWINGS



Front View



Side View



Rear View

ENVIRONMENTAL

	Operating	Storage / Transit
Temperature:	0°C to +50°C	-20°C to +70°C
Altitude:	6000 ft. (1,829m)	50,000 ft. (15,240m)
Humidity:	5% to 95% Non condensing	5% to 95% Non condensing
Shock:	10 Gs @ 11ms	15 Gs @ 11ms (per ASTM 0775)
Vibration:	1.0 Gs @ 10 to 330 Hz	1.2 Gs @ 5 to 330 Hz
Agencies:	Designed to meet UL 1950, FCC Class A or B, CE	

CUSTOM CONFIGURATIONS

11A ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑ ❑

❑❑ NUMBER OF SLOTS BP
00-21: Single BP; AY-YA: Split
02 = 2 slot
05 = 5 slot
06 = 6 slot
14 = 14 slot

❑ BP BARE BOARD
E = 1 x SM
F = 2 x SM (Bussed IPMB)
G = 2 x SM (Radial IPMB)
Z = Custom

❑ FABRIC ARCHITECTURE
F = Star
G = Dual Star
H = Mesh
J = Replicated Mesh
Z = Custom

❑ COOLING
A = 1 x Tray (plug in)
B = 2 x Tray (plug in)
C = 3 x Tray (Plug in)
Z = Custom

❑ HEIGHT
1 =1U
2 = 2U
4 = 4U
5 = 5U
C = 12U
D = 13U

❑ WIDTH
8 = 84 T
E = ETSI

❑ REAR I/O
N = No
Y = Yes

❑ DEPTH
2 = 200 - 299mm
3 = 300 - 399mm
4 = 400 - 499mm

❑ CARD ORIENTATION
V = Vertical
H = Horizontal

❑ PSU INPUT
C = 90 - 230VAC (Fixed)
G = 90 - 230VAC (Plug-in)
H = 48VDC
M = Dual 48VDC
N = Quad 48VDC
P = 90-230VAC(2 x HS, N+1)
Q = 90-230VAC(3 x HS, N+1)
X = No PSU

❑ PSU OUTPUT
(NOT ALL PSU COMBINATIONS AVAILABLE)
2 = 200 - 299 watts
3 = 300 - 399 watts
4 = 400 - 499 watts
5 = 500 - 599 watts
6 = 600 - 699 watts
8 = 800 - 899 watts
A = 1000 - 1199 watts
B = 1200 - 1299 watts
C = 1600 - 1799 watts
D = 1800 - 1999 watts
E = 2000 - 2199 watts
F = 2200 - 2399 watts
G = 2400 - 2599 watts
H = 2600 - 2799 watts
X = Not Installed

❑ SHELF MANAGER (Installed)
R = 1 x Fixed
S = 1 x Plug in
D = 2 x Plug in
X = Not Installed

*NOTE: Elma's radial IPMB signals are radially connected across the backplane to the Shelf ManagerCarrier Card. The Shmm 500 IPM module resides on the carrier card where these connections are bussed.

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MicroTCA System Platform, Overview

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DESCRIPTION

MicroTCA (Micro Telecommunications Computing Architecture or MTCA.0) is an open system-level chassis specification developed by PICMG (PCI Manufacturers Group) for low-cost, small-form-factor utilizing AdvancedMC modules plugged directly into a backplane. MicroTCA inherits many of ATCA's advanced features, allowing it to support a fully managed, redundant system; it can also be configured into a simplified, non-redundant system with a "non-intelligent" card for low-cost applications. MicroTCA is defined to be complementary to AdvancedTCA, targeting edge and access applications, Customer Premises Equipment (CPE), and other applications where cost and size are major constraints. This includes data centers, industrial control, and medical, among other applications.

Elma Electronic Inc. is an active member of the PICMG MicroTCA subcommittee, providing technology leadership in the area of chassis platform and backplane design. Elma's MicroTCA solutions range from modular, full featured platforms to rugged MIL-STD configurations ready for harsh environment deployment. In addition, by optimizing solutions to meet application specific needs, Elma has developed a range of "cost reduced" platforms meet the expectations of the telecom and enterprise markets.

ADVANTAGES:

- Complementary to ATCA
- Support applications where ATCA is not ideal
- Heavy emphasis on reduced start-up costs
- Leverage use of defined AdvancedMC Module standard
- AdvancedMC's directly connect to the backplane
- Smaller physical box size for size constrained applications
- Scalable reliability (relaxed system management complexity)
- Modular and serviceable (front-loadable, hot-swap)
- Rugged support for outside plant systems
- Universal platform (vs. proprietary design)

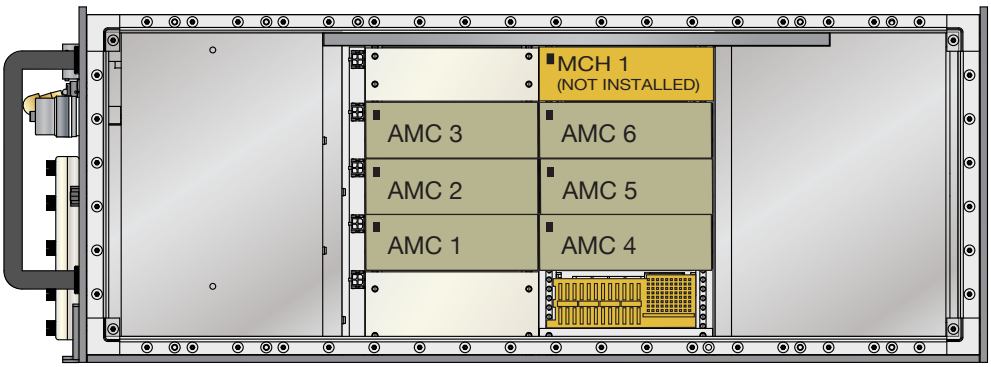
FEATURES:

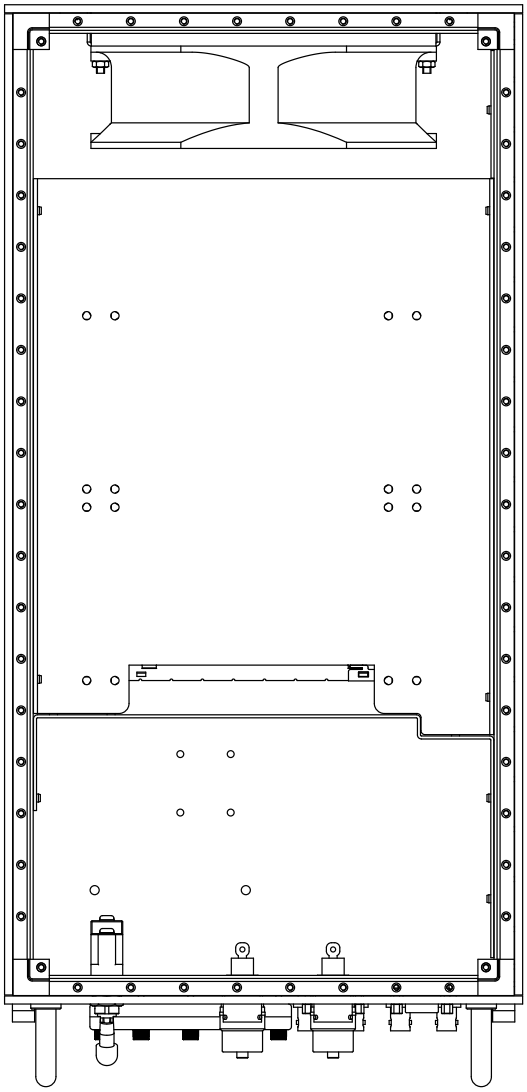
- Compliant to latest MicroTCA.0 specifications
- Modular design using tooled extrusions and card guides
- Allows various chassis configurations using standard building blocks
- Customization is faster, easier, and more cost-effective as design is built upon a proven modular platform
- Platforms can be assembled with a high degree of precision and meet tight design tolerances - modules plug in easily
- Accommodates various backplane configurations based on a combination of full-size (6HP), mid-size (4HP) and compact (3HP) modules without any impact to chassis mechanics
- Plastic card guides provide isolation between the modules and the chassis mechanics
- Extrusion approach will facilitate future ruggedization efforts of the modules' front panel

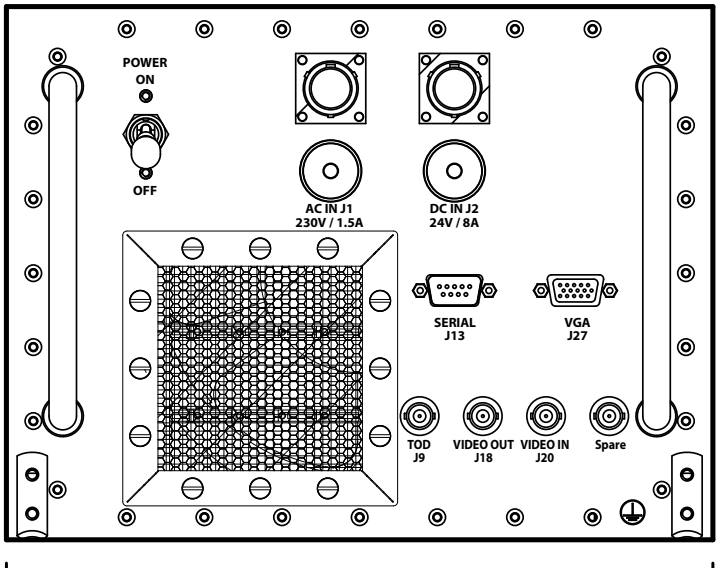
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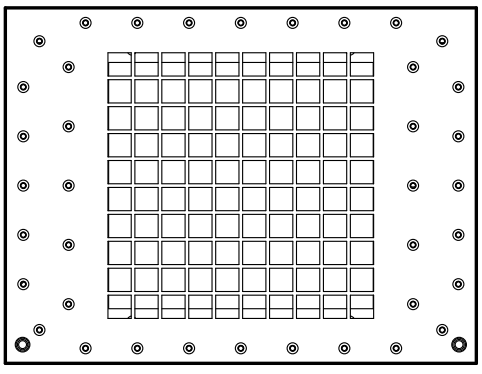
LINE DRAWINGS

MICROTCA CHASSIS PLATFORM: ATR - Air Transport, Rugged

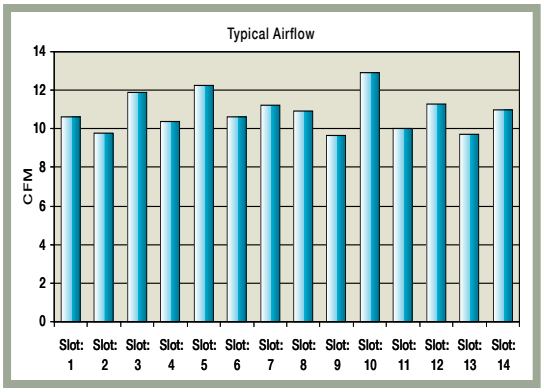


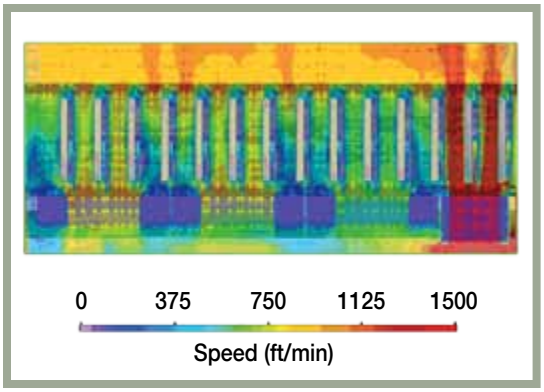






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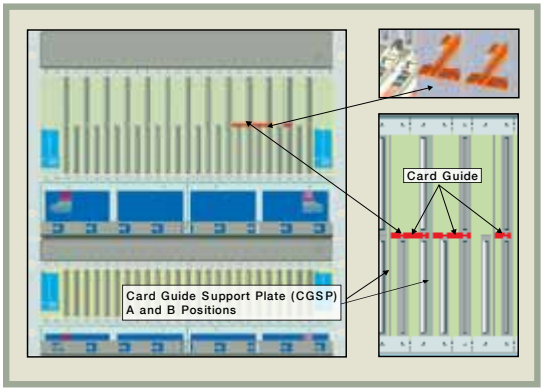
THERMAL SIMULATIONS

Elma has performed extensive thermal simulation studies to optimize the design of its comprehensive MicroTCA packaging product line. It ranges from development systems to highly redundant systems to fully populated cabinet-level solutions.

Using the Computational Fluid Dynamics (CFD) modeling software Flotherm, Elma's engineers optimize air intake and exhaust openings, increase or decrease plenum space, locate baffles to vary slot openings and redirect air flow where required. Locating hot spots in the chassis, the designer can simulate various scenarios to rectify the situation and select the appropriate fans and components. Finally, the designer finds the ideal balance of cooling, EMC, audible noise, power, and other elements to meet or exceed the specifications and keep costs low.

Reference AdvancedMC modules according to MicroTCA specification are used by the Elma team. Any custom AdvancedMC module can be incorporated in the thermal simulation to verify and optimize your specific cooling requirements.

Elma's design philosophy embraces extensive use of thermal simulations that helps to perfect the design and reduce time to market. Our Validation Lab includes thermal, environmental, and EMC chambers and a wind tunnel to verify the results.



MODULAR DESIGN

Elma's unique modular MicroTCA solution allows a wide range of design options. The Elma solution is extrusion-based, with modular card guides allowing various slot counts, card heights, and component configurations. This greatly reduces the costs, lead-time, and risk of tailoring a configuration to a customer's specific needs. The card guide support plate allows the same chassis to contain both single width (75mm) or double width (150mm) modules. The Elma modular design also keeps prototyping costs low. When a project moves to higher volumes, Elma can switch from extrusions to stamped sheet metal.

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MicroTCA Order Key

[11M, 11M2, 32M, 39M, 12R2, ATR]

NUMBER OF AMC SLOTS
Example: 01 = 1, 10 = 10

MODULE SIZE
- S = Single Module
- D = Double Module
- Z = Combination
- X = Not Installed

MODULE SIZE (PITCH)
- 3 = Compact (3HP)
- 4 = Mid-Size (4HP)
- 6 = Full-Size (6HP)
- Z = Combination

FABRIC TOPOLOGY
- H = Mesh
- J = Redundant Mesh
- K = Single Star
- L = Dual Star
- N = Non Redundant
- X = Not installed
- Z = Custom

HEIGHT
- 1 =1U
- 2 = 2.5U
- 3 = 3U
- 4 = 4U
- 5 = 5U
- 6 = 6U
- 7 = 7U
- 8 = 8U

WIDTH
- 3 = 36T
- 6 = 63T
- 4 = 42T
- 7 = 87T
- 8 = 84 T
- E = ETSI

DEPTH
- 2 = 200 - 299mm
- 3 = 300 - 399mm

MODULE ORIENTATION
- V = Vertical (Defaut Std)
- H = Horizontal or custom

PSU INPUT
- C = 90 - 230VAC (Fixed)
- G = 90 - 230VAC (Plug in)
- H = 48VDC (Plug-in)
- K = 48VDC (Fixed)
- M = Dual 48VDC (2 x HS, N + 1)
- P = 90 - 230VAC(2 x HS, N+1)
- X = No PSU
- Y = 24V Plug in
- Z = Dual 24V Plug in

PSU OUTPUT
(NOT ALL PSU COMBINATIONS AVAILABLE)
- 2 = 200 - 299 watts
- 3 = 300 - 399 watts
- 4 = 400 - 499 watts
- 5 = 500 - 599 watts
- X = Not Installed

MCH
- S = 1 x plugin
- D = 2 x plugin
- X = Not Installed

JSM
- Y = Installed
- X = Not Installed

COOLING
- P = PUSH Cooling
- R = Redundant Push-Pull
- X = Not Installed

* Note 1: 1x MCH supports 12 AMC slots
** Note 2: All slot counts are based on total number of available AMC slots (single, double or single stacked).

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MicroSlim, MicroTCA, Chassis Platform

1U & 3U - 19" /Rackmount, HA, Horizontal



FEATURES:

- 19" rack mount, fully compliant to MicroTCA.0 Spec. Rev 1.0
- High availability, managed platform, with plug removable FRUs
- Low Profile 1U and 3U configurations (optimized module density)
- Holds 6 or 12 AMC's
- Star and dual star backplane topology options
- Accepts MicroTCA compliant, plug in MCH
- 2, hot swap, fully IPMI managed cooling units
- Plug removable, fully IPMI managed Power Modules (PMs)
- AC or DC input power options
- Mid or Full sized modules accepted

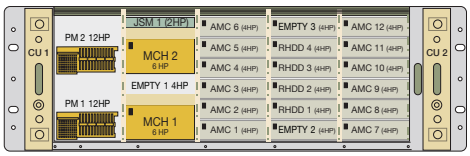
SCOPE OF SUPPLY

High quality 19" rack mount chassis platform compliant to the Micro TCA.0 Rev 1.0 specification consisting of; black powder coated sheet steel enclosure, high performance PICMG system backplane, power supply, cooling system and AC/DC power components. Assembled, wired and tested prior to shipment.

ORDERING INFORMATION



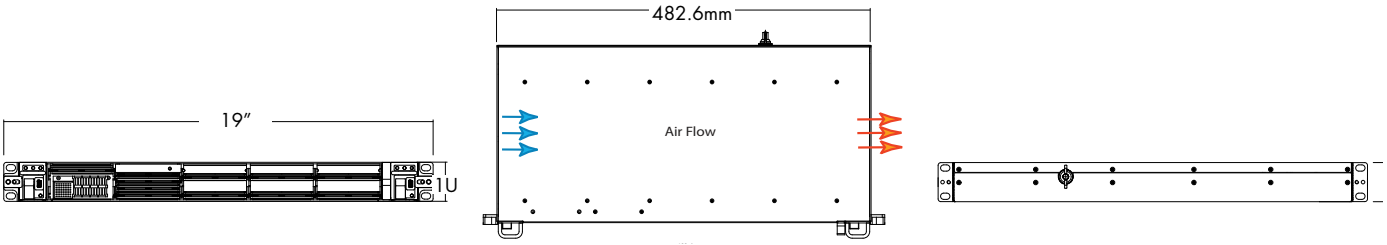
Description	Order Number
■ 1U H x 482.6mm W x 210mm D ■ Holds 6 AMCs (single, mid-sized) ■ Star backplane: 6 AMC, 1 JTAG, 1 MCH, 1 PM ■ 2 x Plug removable Cooling Units ■ 1 x 380 W 48VDC, power module (plug in) ■ MCH and JSM not included	39M06S4K182HH3XXR



Description	Order Number
■ 3U H x 482.6mm W x 210mm D ■ Holds 12 AMCs (single, mid-sized) ■ Dual Star backplane: 12 AMC, 1 JTAG, 2 MCH, 2 PM ■ 2 x Plug removable Cooling Units ■ 1 x 600 W 48VDC, power module (plug in) ■ MCH and JSM not included	39M12S4L382HH6XXR

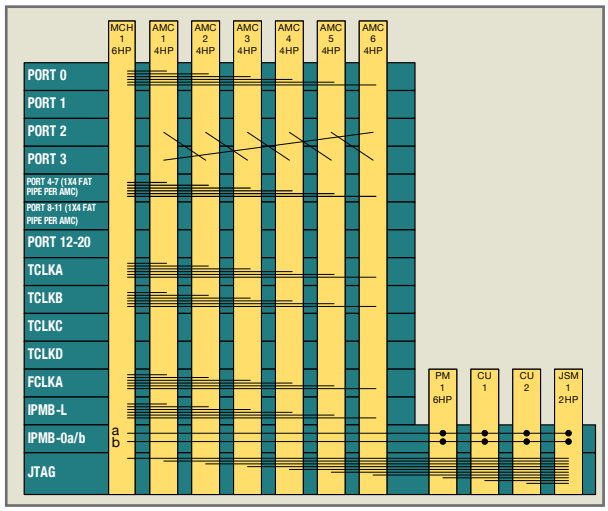
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LINE DRAWINGS



Front View **Top View** **Rear View**

BACKPLANE MAPPING



ENVIRONMENTAL

	Operating	Storage / Transit
Temperature:	0°C to +50°C	-20°C to +70°C
Altitude:	6000 ft. (1,829m)	50,000 ft. (15,240m)
Humidity:	5% to 95% Non condensing	5% to 95% Non condensing
Shock:	10 Gs @ 11ms	15 Gs @ 11ms (per ASTM 0775)
Vibration:	1.0 Gs @ 10 to 330 Hz	1.2 Gs @ 5 to 330 Hz
Agencies:	Designed to meet UL 1950, FCC Class A or B, CE	

CUSTOM CONFIGURATIONS

39M ❑❑❑❑❑❑ 8 2 H ❑❑❑❑

❑❑ NUMBER OF AMC SLOTS
Example: 01 = 1, 10 = 10

❑ MODULE SIZE
S = Single Module
D = Double Module
Z = Combination
X = Not Installed

❑ MODULE SIZE (PITCH)
3 = Compact (3HP)
4 = Mid-Size (4HP)
6 = Full-Size (6HP)
Z = Combination

❑ FABRIC TOPOLOGY
K = Single Star
L = Dual Star
X = Not installed
Z = Custom

❑ HEIGHT
1 =1U
3 = 3U

❑ WIDTH
8 = 84 T

❑ DEPTH
2 = 200 - 299mm

❑ MODULE ORIENTATION
H = Horizontal or custom

❑ PSU INPUT
G = 90 - 230VAC (Plug in)
H = 48VDC (Plug-in)
K = 48VDC (Fixed)
M = Dual 48VDC (2xHS, N+1)
P = 90 - 230VAC(2 x HS, N+1)
X = No PSU
Y = 24V Plug in
Z = Dual 24V Plug in

❑ PSU OUTPUT
(NOT ALL PSU COMBINATIONS AVAILABLE)
2 = 200 - 299 watts
3 = 300 - 399 watts
4 = 400 - 499 watts
5 = 500 - 599 watts
X = Not Installed

❑ MCH
S = 1 x Plugin
D = 2 x Plugin
X = Not Installed

❑ JSM
Y = Installed
X = Not Installed

❑ COOLING
P = PUSH Cooling
R = Redundant Push-Pull
X = Not Installed

* Note 1: 1x MCH supports 12 AMC slots
** Note 2: All slot counts are based on total number of available AMC slots (single, double or single stacked).

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BlueBox, MicroTCA, Chassis Platform

Desktop Development Unit, Vertical



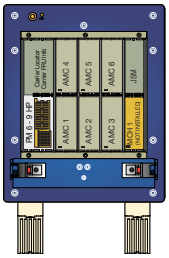
FEATURES:

- Development System Platform MicroTCA.0 Spec. Rev 1.0
- Desk top configuration (6U x 42HP x 243mm)
- Elegant case with tilt feet and carry handle
- Module card cage base configurable card guide/extrusion design
- Holds 6 single/full-size, or 3 double/full-size AMCs
- Hot swappable, PM (AC or DC input options)
- PCI-Express, Serial Rapid I/O and 1 0GBase-BX4 Switching support
- Direct connection to S-ATA / SAS
- 3 synchronization clock networks
- ELMA EMMC*, IPMI Managed Cooling Unit (see page 109)

SCOPE OF SUPPLY

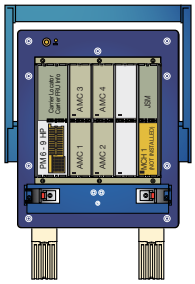
High quality desktop/portable platform compliant to the Micro TCA.0 Rev 1.0 specification consisting of; blue powder coated sheet steel enclosure, high performance PICMG system backplane, power module, cooling unit and AC/DC power components. Assembled, wired and tested prior to shipment.

ORDERING INFORMATION



Description	Order Number
■ 6U H x 42HP W x 243mm D ■ Holds 6 AMC (single/Full-sized) ■ Star backplane: 6 AMCs, 1 MCH, 1 PM, 1 CU ■ 1 x hot swap CU, bottom to top airflow ■ 1 x 400W 90-230VAC input, PM (plug in) ■ MCH not included	39M06S6K642VG4XXP

NOTE: Handle is optional

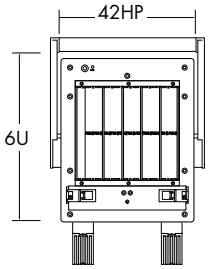


Description	Order Number
■ 6U H x 42HP W x 243mm D ■ Holds 4 AMCs (1 x double/full-sized, 4 x single/ Full-sized) ■ Star backplane: 4 AMC, 1 MCH, 1 PM, 1 CU ■ 1 x hot swap CU, bottom to top airflow ■ 1 x 400 W 48VDC, PM (plug in) ■ MCH not included	39M04Z6K642VG4XXP

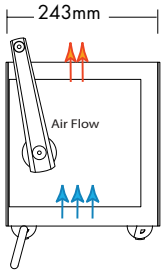
NOTE: Handle is optional

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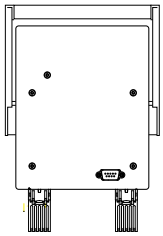
LINE DRAWINGS



Front View

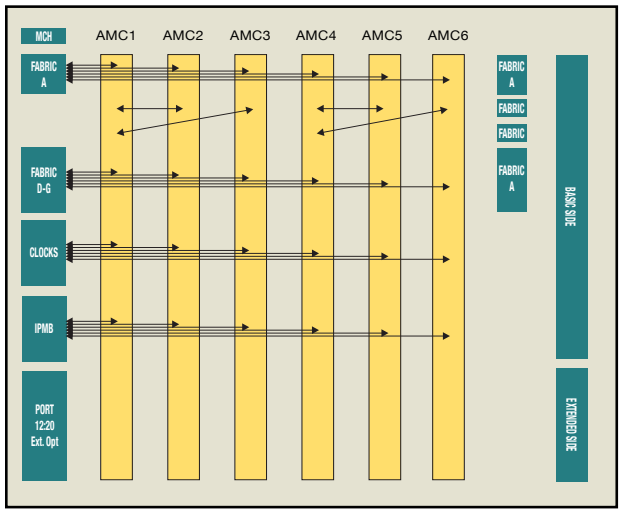


Side View



Rear View

BACKPLANE MAPPING



ENVIRONMENTAL

	Operating	Storage / Transit
Temperature:	0°C to +50°C	-20°C to +70°C
Altitude:	6000 ft. (1,829m)	50,000 ft. (15,240m)
Humidity:	5% to 95% Non condensing	5% to 95% Non condensing
Shock:	10 Gs @ 11ms	15 Gs @ 11ms (per ASTM 0775)
Vibration:	1.0 Gs @ 10 to 330 Hz	1.2 Gs @ 5 to 330 Hz
Agencies:	Designed to meet UL 1950, FCC Class A or B, CE	

CUSTOM CONFIGURATIONS

39M ❑❑❑❑❑ 6 4 2 V ❑❑❑❑

❑❑ NUMBER OF AMC SLOTS
Example: 01 = 1, 10 = 10

❑ MODULE SIZE
S = Single Module
D = Double Module
Z = Combination
X = Not Installed

❑ MODULE SIZE (PITCH)
3 = Compact (3HP)
4 = Mid-Size (4HP)
6 = Full-Size (6HP)
Z = Combination

❑ FABRIC TOPOLOGY
K = Single Star
L = Dual Star
X = Not installed
Z = Custom

❑ HEIGHT
6 = 6U

❑ WIDTH
4 = 42 T

❑ DEPTH
2 = 200 - 299mm

❑ MODULE ORIENTATION
V = Vertical (Defaut Std)

❑ PSU INPUT
G = 90 - 230VAC (Plug in)
H = 48VDC (Plug-in)
K = 48VDC (Fixed)
M = Dual 48VDC (2 x HS, N + 1)
P = 90 - 230VAC(2 x HS, N+1)
X = No PSU
Y = 24V Plug in
Z = Dual 24V Plug in

❑ PSU OUTPUT
(NOT ALL PSU COMBINATIONS AVAILABLE)
2 = 200 - 299 watts
3 = 300 - 399 watts
4 = 400 - 499 watts
5 = 500 - 599 watts
X = Not Installed

❑ MCH
S = 1 x Plugin
D = 2 x Plugin
X = Not Installed

❑ JSM
Y = Installed
X = Not Installed

❑ COOLING
P = PUSH Cooling
R = Redundant Push-Pull
X = Not Installed

* Note 1: 1x MCH supports 12 AMC slots
** Note 2: All slot counts are based on total number of available AMC slots (single, double or single stacked).

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TYPE 11M, MicroTCA, Chassis Platform

8U - 19" Rackmount, HA, Vertical



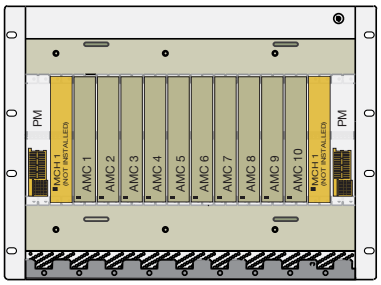
FEATURES:

- 19" rack mount, fully compliant to MicroTCA.0 Spec. Rev 1.0
- High availability, managed platform, with plug removable FRUs
- 8U H x 84HP x 198mm D (4U, 5U and 6U options)
- Holds 14 AMC's (single, full sized)
- Modular extrusion-based solution
- Single or dual star backplanes optional
- Accepts MicroTCA compliant, plug in MCH
- 6, hot swap, fully IPMI managed cooling units
- Plug removable, fully IPMI managed Power Modules (PMs), AC or DC input power options
- Removable air filter(s)
- Customized versions available

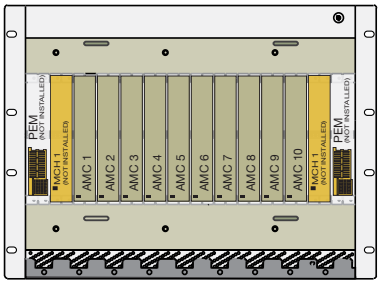
SCOPE OF SUPPLY

High quality 19" rack mount chassis platform compliant to the Micro TCA.0 Rev 1.0 specification consisting: of pre-galvanized steel enclosure, high performance PICMG system backplane, power module, cooling units and AC/DC power components. Assembled, wired and tested prior to shipment.

ORDERING INFORMATION



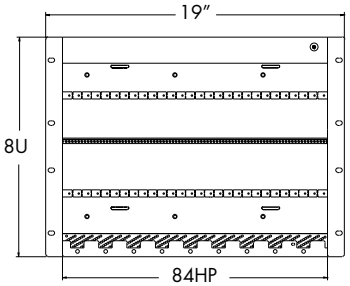
Description	Order Number
■ 8U H x 84HP W x 198mm D ■ Holds 10 AMCs (double/full-sized) ■ Dual Star backplane: 10 AMC, 2 MCH, 2 PM ■ 6 x plug removable Cooling Units, push/pull ■ Single, removable air filter ■ 2 x 400W, 48VDC input PMs (Hot swap) ■ MCH not included	11M10D6L881VM4XXR



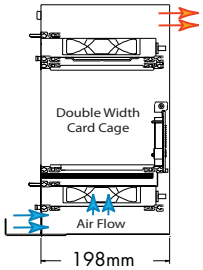
Description	Order Number
■ 8U H x 84HP W x 198mm D ■ Holds 10 AMCs (double/full-sized) ■ Dual Star backplane: 10 AMC, 2 MCH, 2 PM ■ 6 x plug removable Cooling Units, push/pull ■ Single, removable air filter ■ Accepts 2 x single/full sized PEMs (not installed) ■ MCH not included	11M10D6L881VMXXXR

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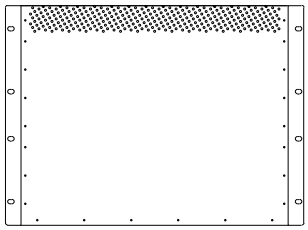
LINE DRAWINGS



Front View

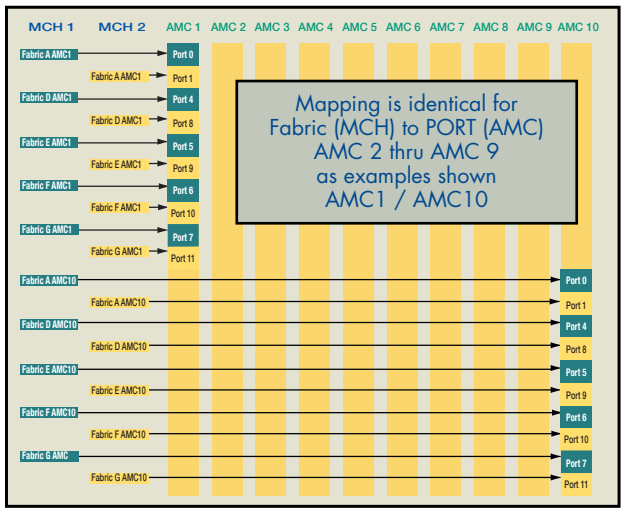


Top View



Rear View

BACKPLANE MAPPING



ENVIRONMENTAL

	Operating	Storage / Transit
Temperature:	0°C to +50°C	-20°C to +70°C
Altitude:	6000 ft. (1,829m)	50,000 ft. (15,240m)
Humidity:	5% to 95% Non condensing	5% to 95% Non condensing
Shock:	10 Gs @ 11ms	15 Gs @ 11ms (per ASTM 0775)
Vibration:	1.0 Gs @ 10 to 330 Hz	1.2 Gs @ 5 to 330 Hz
Agencies:	Designed to meet UL 1950, FCC Class A or B, CE	

CUSTOM CONFIGURATIONS

11M ❑❑❑❑❑ 6 8 1 V ❑❑❑❑

❑❑ NUMBER OF AMC SLOTS
Example: 01 = 1, 10 = 10

❑ MODULE SIZE
S = Single Module
D = Double Module
Z = Combination
X = Not Installed

❑ MODULE SIZE (PITCH)
3 = Compact (3HP)
4 = Mid-Size (4HP)
6 = Full-Size (6HP)
Z = Combination

❑ FABRIC TOPOLOGY
K = Single Star
L = Dual Star
X = Not installed
Z = Custom

❑ HEIGHT
6 = 8U

❑ WIDTH
8 = 84 T

❑ DEPTH
1 = 100 - 199mm
2 = 200 - 299mm

❑ MODULE ORIENTATION
V = Vertical (Defaut Std)

❑ PSU INPUT
G = 90 - 230VAC (Plug in)
H = 48VDC (Plug-in)
K = 48VDC (Fixed)
M = Dual 48VDC (2 x HS, N + 1)
P = 90 - 230VAC(2 x HS, N+1)
X = No PSU
Y = 24V Plug in
Z = Dual 24V Plug in

❑ PSU OUTPUT
(NOT ALL PSU COMBINATIONS AVAILABLE)
2 = 200 - 299 watts
3 = 300 - 399 watts
4 = 400 - 499 watts
5 = 500 - 599 watts
X = Not Installed

❑ MCH
S = 1 x Plugin
D = 2 x Plugin
X = Not Installed

❑ JSM
Y = Installed
X = Not Installed

❑ COOLING
P = PUSH Cooling
R = Redundant Push-Pull
X = Not Installed

* Note 1: 1x MCH supports 12 AMC slots
** Note 2: All slot counts are based on total number of available AMC slots (single, double or single stacked).

TYPE 32M, MicroTCA, Chassis Platform

4U Portable Tower, Vertical



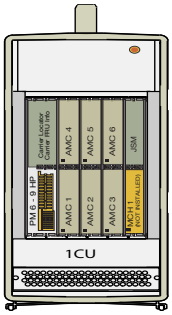
FEATURES:

- Portable tower fully compliant to MicroTCA.0 Spec. Rev 1.0
- Ideal for prototyping & demonstrations
- High availability, managed platform, with plug removable FRUs
- Module card cage base configurable card guide/extrusion design
- Holds 6 single/full-size, or 3 double/full-size AMCs
- Hot swappable, PM (AC or DC input options)
- PCI-Express, Serial Rapid I/O and 1 0GBase-BX4 Switching support
- Direct connection to S-ATA / SAS
- 3 synchronization clock networks
- ELMA EMMC*, IPMI Managed Cooling Unit (see page 109)

SCOPE OF SUPPLY

High quality portable or desk side tower platform compliant to the Micro TCA.0 Rev 1.0 specification consisting: of vinyl clad aluminum enclosure, high performance PICMG system backplane, power module, cooling system and AC/DC power components. Assembled, wired and tested prior to shipment.

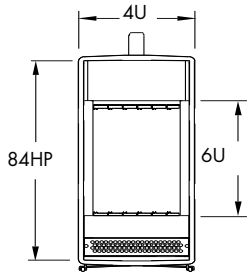
ORDERING INFORMATION



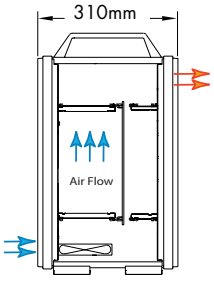
Description	Order Number
■ 4U W x 63HP H x 290mm D ■ Holds 6 AMC (single/Full-sized) ■ Star backplane: 6 AMCs, 1 MCH, 1 PM, 1 CU ■ 1 x hot swap CU, bottom to top airflow ■ 1 x 400W 90-230VAC input, PM (plug in) ■ MCH not included	32M06S6K462VG4XXP

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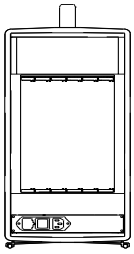
LINE DRAWINGS



Front View

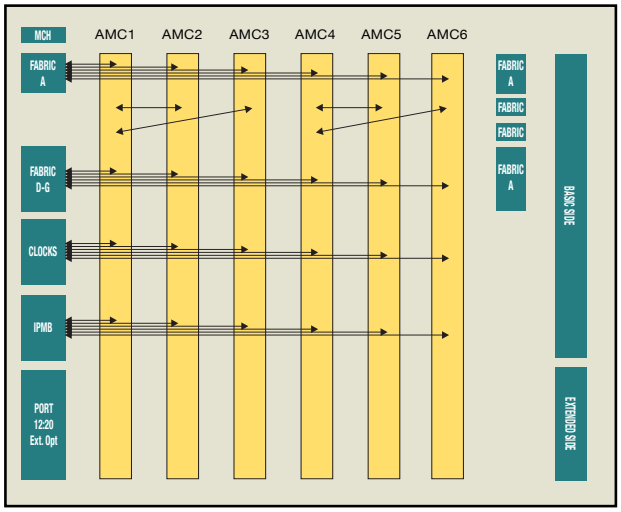


Side View



Rear View

BACKPLANE MAPPING



ENVIRONMENTAL

	Operating	Storage / Transit
Temperature:	0°C to +50°C	-20°C to +70°C
Altitude:	6000 ft. (1,829m)	50,000 ft. (15,240m)
Humidity:	5% to 95% Non condensing	5% to 95% Non condensing
Shock:	10 Gs @ 11ms	15 Gs @ 11ms (per ASTM 0775)
Vibration:	1.0 Gs @ 10 to 330 Hz	1.2 Gs @ 5 to 330 Hz
Agencies:	Designed to meet UL 1950, FCC Class A or B, CE	

CUSTOM CONFIGURATIONS

32M ❑❑❑❑❑ 4 6 2 V ❑❑❑❑

❑❑ NUMBER OF AMC SLOTS
Example: 01 = 1, 10 = 10

❑ MODULE SIZE
S = Single Module
D = Double Module
Z = Combination
X = Not Installed

❑ MODULE SIZE (PITCH)
3 = Compact (3HP)
4 = Mid-Size (4HP)
6 = Full-Size (6HP)
Z = Combination

❑ FABRIC TOPOLOGY
K = Single Star
L = Dual Star
X = Not installed
Z = Custom

❑ WIDTH
4 = 4U

❑ HEIGHT
6 = 63T

❑ DEPTH
2 = 200 - 299mm

❑ MODULE ORIENTATION
V = Vertical (Defaut Std)

❑ PSU INPUT
C = 90 - 230VAC (Fixed)
G = 90 - 230VAC (Plug in)
H = 48VDC (Plug-in)
K = 48VDC (Fixed)
M = Dual 48VDC (2xHS, N+1)
P = 90 - 230VAC(2 x HS, N+1)
X = No PSU
Y = 24V Plug in
Z = Dual 24V Plug in

❑ PSU OUTPUT
(NOT ALL PSU COMBINATIONS AVAILABLE)
2 = 200 - 299 watts
3 = 300 - 399 watts
4 = 400 - 499 watts
5 = 500 - 599 watts
X = Not Installed

❑ MCH
S = 1 x Plugin
D = 2 x Plugin
X = Not Installed

❑ JSM
Y = Installed
X = Not Installed

❑ COOLING
P = PUSH Cooling
R = Redundant Push-Pull
X = Not Installed

* Note 1: 1x MCH supports 12 AMC slots
** Note 2: All slot counts are based on total number of available AMC slots (single, double or single stacked).

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COMSlim, MicroTCA, Chassis Platform

1U - 19" Rackmount, Optimized, Horizontal



FEATURES:

- Cost Optimized 19" rack mount chassis platform
- Low Profile 1U, 2U and 3U configurations available
- Holds 6 - 12 AMCs
- Mid or Full sized modules accepted
- Star and dual star backplane topology options
- PSU and Cooling actively managed on Backplane
- Designed to accept feature specific MCH (will accept std. MCH)
- Push/Pull cooling configuration (fixed)
- High reliability power supply (fixed)
- AC or DC input power options

SCOPE OF SUPPLY

High quality 19" rack mount chassis platform compliant to the Micro TCA.0 Rev 1.0 specification consisting of; black powder coated sheet steel enclosure, high performance PICMG system backplane, power supply, cooling system and AC/DC power components. Assembled, wired and tested prior to shipment.

ORDERING INFORMATION



Description	Order Number
■ 1U H x 449mm W x 210mm D ■ Holds 6 AMCs (single, mid-sized) ■ Star backplane: 6 AMC, 1 MCH ■ Push/Pull cooling, front to rear, 8 x fans ■ 1 x 300 W 48VDC, power supply (fixed) ■ MCH not included	39M06S4K182HK3XXR



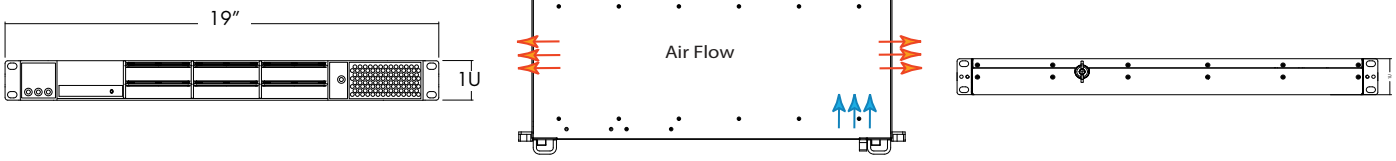
Description	Order Number
■ 1U H x 449mm W x 210mm D ■ Holds 6 AMCs (single, mid-sized) ■ Star backplane: 6 AMC, 1 MCH ■ Push/Pull cooling, front to rear, 8 x fans ■ 1 x 300 W 48VDC, power supply (fixed) ■ Cost Optimized MCH installed	39M06S4K182HK3SXR



MCH Description
(see page 108)

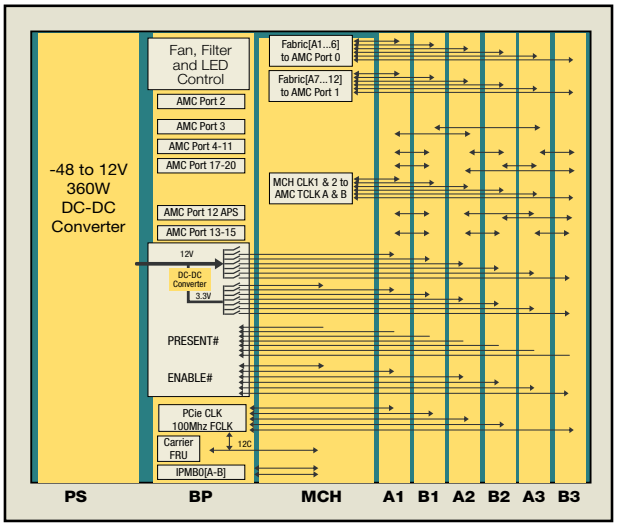
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LINE DRAWINGS



Front View **Top View** **Rear View**

BACKPLANE MAPPING



ENVIRONMENTAL

	Operating	Storage / Transit
Temperature:	0°C to +50°C	-20°C to +70°C
Altitude:	6000 ft. (1,829m)	50,000 ft. (15,240m)
Humidity:	5% to 95% Non condensing	5% to 95% Non condensing
Shock:	10 Gs @ 11ms	15 Gs @ 11ms (per ASTM 0775)
Vibration:	1.0 Gs @ 10 to 330 Hz	1.2 Gs @ 5 to 330 Hz
Agencies:	Designed to meet UL 1950, FCC Class A or B, CE	

CUSTOM CONFIGURATIONS

32M ❑❑❑❑❑ 1 8 2 H ❑❑❑❑

❑❑ NUMBER OF AMC SLOTS
Example: 01 = 1, 10 = 10

❑ MODULE SIZE
S = Single Module
D = Double Module
Z = Combination
X = Not Installed

❑ MODULE SIZE (PITCH)
3 = Compact (3HP)
4 = Mid-Size (4HP)
6 = Full-Size (6HP)
Z = Combination

❑ FABRIC TOPOLOGY
K = Single Star
L = Dual Star
X = Not installed
Z = Custom

❑ HEIGHT
1 = 1U

❑ WIDTH
8 = 84T

❑ DEPTH
2 = 200 - 299mm

❑ MODULE ORIENTATION
H = Horizontal or custom

❑ PSU INPUT
C = 90 - 230VAC (Fixed)
G = 90 - 230VAC (Plug in)
H = 48VDC (Plug-in)
K = 48VDC (Fixed)
M = Dual 48VDC (2 x HS, N + 1)
P = 90 - 230VAC(2 x HS, N+1)
X = No PSU
Y = 24V Plug in
Z = Dual 24V Plug in

❑ PSU OUTPUT
(NOT ALL PSU COMBINATIONS AVAILABLE)
2 = 200 - 299 watts
3 = 300 - 399 watts
4 = 400 - 499 watts
5 = 500 - 599 watts
X = Not Installed

❑ MCH
S = 1 x Plugin
D = 2 x Plugin
X = Not Installed

❑ JSM
Y = Installed
X = Not Installed

❑ COOLING
P = PUSH Cooling
R = Redundant Push-Pull
X = Not Installed

* Note 1: 1x MCH supports 12 AMC slots
** Note 2: All slot counts are based on total number of available AMC slots (single, double or single stacked).

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COMBlue, MicroTCA, Chassis Platform

Desktop, Optimized, Vertical



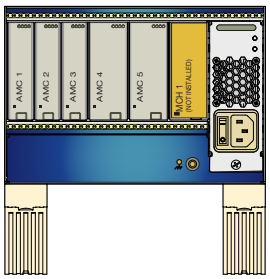
FEATURES:

- Cost Optimized MicroTCA development platform
- Desk top configuration (3U x 42HP x 252mm)
- Holds 5 single/full-size AMCs
- Pluggable 300W PSU, 90-230VAC input, ATX
- Bottom to top cooling
- PSU and CU, IPMI management integrated on active Backplane (Elma EMMC* (see page 109)
- Compatible with management section of MicroTCA specification
- Direct SATA / SAS connections
- Optional connection AMC1 to AMC3

SCOPE OF SUPPLY

High quality desktop/portable platform compliant to the Micro TCA.0 Rev 1.0 specification consisting of; blue powder coated sheet steel enclosure, high performance PICMG system backplane, power module, cooling unit and AC/DC power components. Assembled, wired and tested prior to shipment.

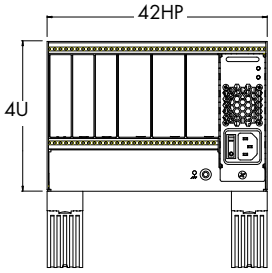
ORDERING INFORMATION



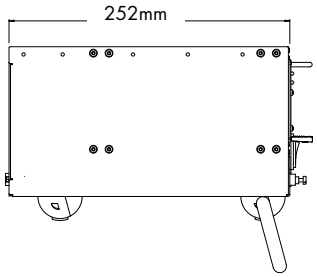
Description	Order Number
■ 3U H x 42HP W x 252mm D ■ Holds 5 AMCs (3 x single/mid-sized, 2 x single/full-sized) ■ Star backplane: 5 AMC, 1 MCH, 1 PSU ■ 1 x Fan , bottom to top airflow ■ 1 x 300W, 90-230VAC input, PSU (plug in) ■ MCH not included	39M05ZZK342VG3XXP

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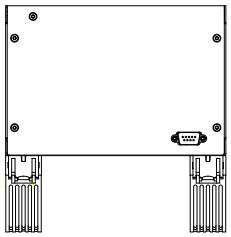
LINE DRAWINGS



Front View

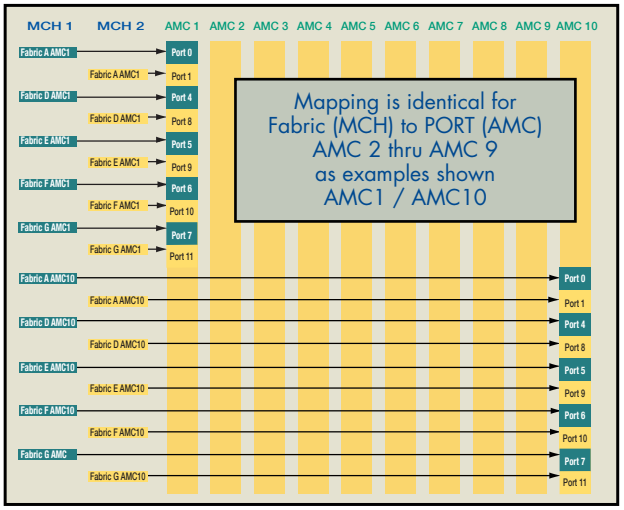


Side View



Rear View

BACKPLANE MAPPING



ENVIRONMENTAL

	Operating	Storage / Transit
Temperature:	0°C to +50°C	-20°C to +70°C
Altitude:	6000 ft. (1,829m)	50,000 ft. (15,240m)
Humidity:	5% to 95% Non condensing	5% to 95% Non condensing
Shock:	10 Gs @ 11ms	15 Gs @ 11ms (per ASTM 0775)
Vibration:	1.0 Gs @ 10 to 330 Hz	1.2 Gs @ 5 to 330 Hz
Agencies:	Designed to meet UL 1950, FCC Class A or B, CE	

CUSTOM CONFIGURATIONS

39M ❑❑❑❑❑ 3 4 2 V ❑❑❑❑

❑❑ NUMBER OF AMC SLOTS
Example: 01 = 1, 10 = 10

❑ MODULE SIZE
S = Single Module
D = Double Module
Z = Combination
X = Not Installed

❑ MODULE SIZE (PITCH)
3 = Compact (3HP)
4 = Mid-Size (4HP)
6 = Full-Size (6HP)
Z = Combination

❑ FABRIC TOPOLOGY
K = Single Star
L = Dual Star
X = Not installed
Z = Custom

❑ HEIGHT
3 = 3U

❑ WIDTH
4 = 42T

❑ DEPTH
2 = 200 - 299mm

❑ MODULE ORIENTATION
V = Vertical (Defaut Std)

❑ PSU INPUT
C = 90 - 230VAC (Fixed)
G = 90 - 230VAC (Plug in)
H = 48VDC (Plug-in)
K = 48VDC (Fixed)
M = Dual 48VDC (2 x HS, N + 1)
P = 90 - 230VAC(2 x HS, N+1)
X = No PSU
Y = 24V Plug in
Z = Dual 24V Plug in

❑ PSU OUTPUT
(NOT ALL PSU COMBINATIONS AVAILABLE)
2 = 200 - 299 watts
3 = 300 - 399 watts
4 = 400 - 499 watts
5 = 500 - 599 watts
X = Not Installed

❑ MCH
S = 1 x Plugin
D = 2 x Plugin
X = Not Installed

❑ JSM
Y = Installed
X = Not Installed

❑ COOLING
P = PUSH Cooling
R = Redundant Push-Pull
X = Not Installed

* Note 1: 1x MCH supports 12 AMC slots
** Note 2: All slot counts are based on total number of available AMC slots (single, double or single stacked).

Type 11M2, MicroTCA, Chassis Platform

5U - 19" Rackmount, Rugged, Vertical



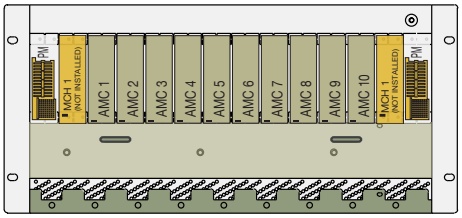
FEATURES:

- 19" rack mount, MIL compliant to PICMG® specification µTCA.1 R1.0
- High availability, managed platform, with plug removable FRUs
- 5U H x 84HP x 198mm D (4U, 5U and 6U options)
- Holds 14 AMC's (single, full sized)
- Modular extrusion-based solution
- Single or dual star backplanes optional
- Accepts MicroTCA compliant, plug in MCH
- 3, hot swap, fully IPMI managed cooling units
- Plug removable, fully IPMI managed Power Modules (PMs), AC or DC input power options
- MIL tested Anti-vibration card guide
- Removable air filter(s)
- Customized versions available

SCOPE OF SUPPLY

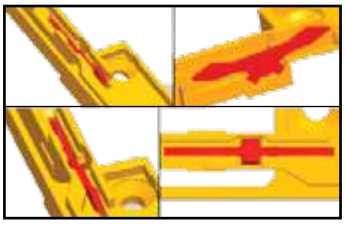
High quality 19" rack mount rugged, chassis platform compliant to the PICMG® specification µTCA.1 R1.0 specification consisting: of pre-galvanized steel enclosure, high performance PICMG system backplane, power module, cooling units and AC/DC power components. Assembled, wired and tested prior to shipment.

ORDERING INFORMATION



Description	Order Number
■ 5U H x 84HP W x 198mm D ■ Holds 10 AMCs (double/full-sized) ■ Dual Star backplane: 10 AMC, 2 MCH, 2 PM ■ 3 x plug removable Cooling Units ■ Single, removable air filter ■ 2 x 400W, 48VDC input PMs (Hot swap) ■ MCH not included	11M210D6L581VM4XXP

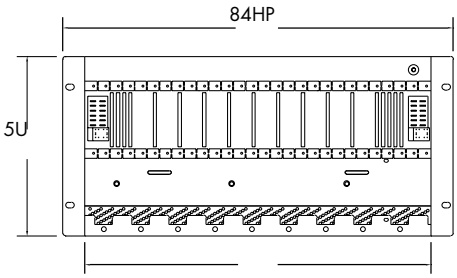
Description	Order Number
■ 5U H x 84HP W x 198mm D ■ Holds 10 AMCs (double/full-sized) ■ Dual Star backplane: 10 AMC, 2 MCH, 2 PM ■ 3 x plug removable Cooling Units ■ Single, removable air filter ■ Accepts 2 x single/full sized PEMs (not installed) ■ MCH not included	11M210D6L581VMXXXP



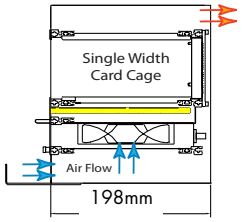
Anti-vibration Card Guide
(see page 129)

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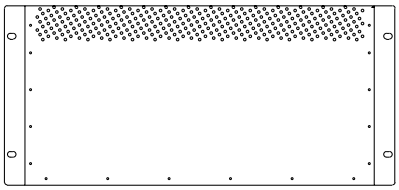
LINE DRAWINGS



Front View

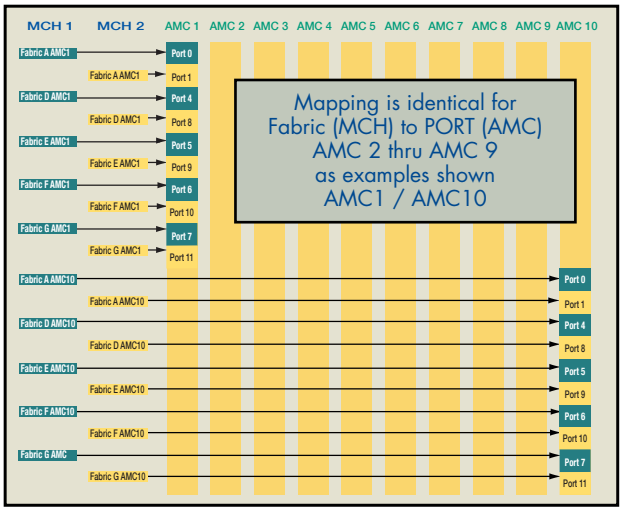


Top View



Rear View

BACKPLANE MAPPING



ENVIRONMENTAL

	Operating	Storage / Transit
Temperature:	0°C to +50°C	-20°C to +70°C
Altitude:	6000 ft. (1,829m)	50,000 ft. (15,240m)
Humidity:	5% to 95% Non condensing	5% to 95% Non condensing
Shock:	10 Gs @ 11ms	15 Gs @ 11ms (per ASTM 0775)
Vibration:	1.0 Gs @ 10 to 330 Hz	1.2 Gs @ 5 to 330 Hz
Agencies:	Designed to meet UL 1950, FCC Class A or B, CE	

CUSTOM CONFIGURATIONS

11M2 ❑❑❑❑❑ 5 8 1 V ❑❑❑❑

❑❑ NUMBER OF AMC SLOTS
Example: 01 = 1, 10 = 10

❑ MODULE SIZE
S = Single Module
D = Double Module
Z = Combination
X = Not Installed

❑ MODULE SIZE (PITCH)
3 = Compact (3HP)
4 = Mid-Size (4HP)
6 = Full-Size (6HP)
Z = Combination

❑ FABRIC TOPOLOGY
K = Single Star
L = Dual Star
X = Not installed
Z = Custom

❑ HEIGHT
5 = 5U

❑ WIDTH
8 = 84T

❑ DEPTH
1 = 100 - 199mm
2 = 200 - 299mm

❑ MODULE ORIENTATION
V = Vertical (Defaut Std)

❑ PSU INPUT
C = 90 - 230VAC (Fixed)
G = 90 - 230VAC (Plug in)
H = 48VDC (Plug-in)
K = 48VDC (Fixed)
M = Dual 48VDC (2 x HS, N + 1)
P = 90 - 230VAC(2 x HS, N+1)
X = No PSU
Y = 24V Plug in
Z = Dual 24V Plug in

❑ PSU OUTPUT
(NOT ALL PSU COMBINATIONS AVAILABLE)
2 = 200 - 299 watts
3 = 300 - 399 watts
4 = 400 - 499 watts
5 = 500 - 599 watts
X = Not Installed

❑ MCH
S = 1 x Plugin
D = 2 x Plugin
X = Not Installed

❑ JSM
Y = Installed
X = Not Installed

❑ COOLING
P = PUSH Cooling
R = Redundant Push-Pull
X = Not Installed

* Note 1: 1x MCH supports 12 AMC slots
** Note 2: All slot counts are based on total number of available AMC slots (single, double or single stacked).

Type 12R2, MicroTCA, Chassis Platform
5U - 19" Rackmount, Rugged, Vertical



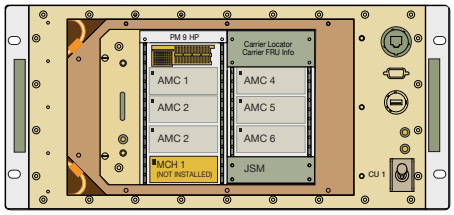
FEATURES:

- Ruggedized MicroTCA COTS System Platform
- PICMG® specification µTCA.1 R1.0
- 19" rackmount, horizontal mount
- Meets MIL-STD-810F, 167, 461D, and 901D
- Shock isolated card cage and device mounting
- Rugged chassis shells from thick aluminum sheets, extrusions, and die-castings. Joined by riveting, spot-welding.
- Front to rear evacuative cooling
- Removable fan tray withLEDs for: voltage monitoring, fan fail and over temp
- Line filter, GND stud, shielded relay, IO panel, USB port, and fuse holder
- Temp: 0 C to 65 C operating temperature, Shock: 25Gs 11 ms

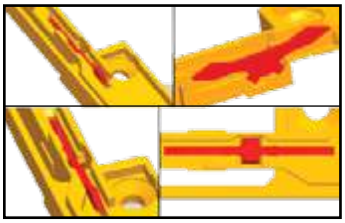
SCOPE OF SUPPLY

The 12R2 is designed to meet the harsh environment of shipboard, airborne, and ground mobile applications per MI-STD's. The low profile makes it ideal when space is a premium. Highly configurable, the unit can be ordered with choice of high performance MicroTCA backplane, fixed or shock isolated card cage, AC or DC input power supply, custom I/O patch panel. Airflow is front to rear utilizing high volume fans. Shock isolated versions are designed to attenuate 25G shock inputs to the chassis to less than 10Gs at the card cage. All components, material and design concepts are chosen to meet the applicable MIL-STD environments. The units come completely assembled and wired.

ORDERING INFORMATION



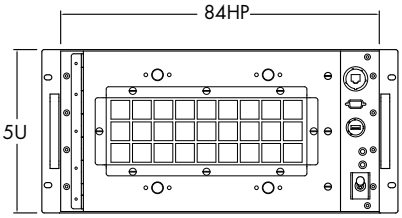
Description	Order Number
■ 5U H x 84HP W x 559mm D ■ Holds 6 AMC (single/Full-sized), shock isolated card cage ■ Star backplane: 6 AMCs, 1 MCH, 1 PM, 1 CU ■ 1 x hot swap CU, bottom to top airflow ■ 1 x 600W 48VDC input, PSU (Fixed) ■ MCH not included	12R206S6K585HK6XXXP



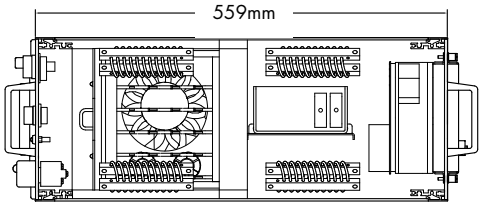
Anti-vibration Card Guide
(see page 129)

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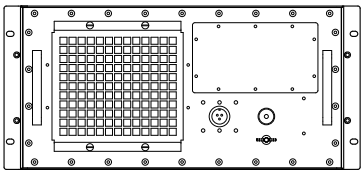
LINE DRAWINGS



Front View

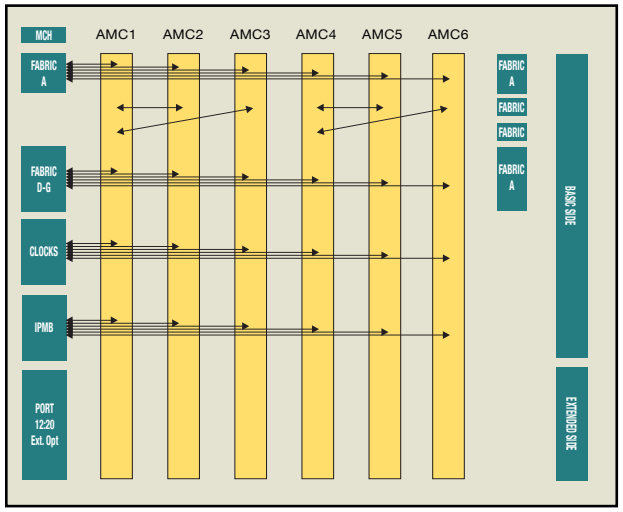


Side View



Rear View

BACKPLANE MAPPING



ENVIRONMENTAL

	Operating	Storage / Transit
Temperature:	0°C to +65°C	-20°C to +85°C
Altitude:	-1,200 to 18,000 ft.	50,000 ft. (15,240m)
Humidity:	0% to 95% Non condensing	0% to 95% Non condensing
Shock:	25 Gs @ 11ms	25 Gs @ 11ms (per ASTM 0775)
Vibration:	4.0 Gs RMS 15 to 2000 Hz	4.0 Gs @ 5 to 2000 Hz
Agencies:	Designed to meet UL 1950, FCC Class A or B, CE	

CUSTOM CONFIGURATIONS

12R2 ❑❑❑❑❑ 5 8 5 H ❑❑❑❑

❑❑ NUMBER OF AMC SLOTS
Example: 01 = 1, 10 = 10

❑ MODULE SIZE
S = Single Module
D = Double Module
Z = Combination
X = Not Installed

❑ MODULE SIZE (PITCH)
3 = Compact (3HP)
4 = Mid-Size (4HP)
6 = Full-Size (6HP)
Z = Combination

❑ FABRIC TOPOLOGY
K = Single Star
L = Dual Star
X = Not installed
Z = Custom

❑ HEIGHT
5 = 5U

❑ WIDTH
8 = 84T

❑ DEPTH
5 = 500 - 599mm

❑ MODULE ORIENTATION
H = Horizontal or custom

❑ PSU INPUT
C = 90 - 230VAC (Fixed)
G = 90 - 230VAC (Plug in)
H = 48VDC (Plug-in)
K = 48VDC (Fixed)
M = Dual 48VDC (2 x HS, N + 1)
P = 90 - 230VAC(2 x HS, N+1)
X = No PSU
Y = 24V Plug in
Z = Dual 24V Plug in

❑ PSU OUTPUT
(NOT ALL PSU COMBINATIONS AVAILABLE)
2 = 200 - 299 watts
3 = 300 - 399 watts
4 = 400 - 499 watts
5 = 500 - 599 watts
6 = 600 - 699 watts
X = Not Installed

❑ MCH
S = 1 x Plugin
D = 2 x Plugin
X = Not Installed

❑ JSM
Y = Installed
X = Not Installed

❑ COOLING
P = PUSH Cooling
R = Redundant Push-Pull
X = Not Installed

ATR, MicroTCA, Chassis Platform

ATR - Air Transport, Rugged



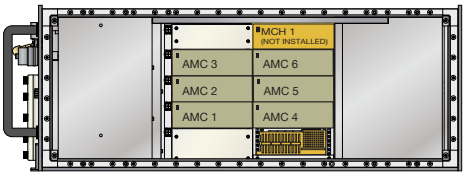
FEATURES:

- COTS, convection cooled 1/2, 3/4, 1, or 1 1/2 ATR per ARINC 404A
- PICMG® specification µTCA.1 R1.0
- IEEE 1101.10 Compliant
- Full range of isolated military power supplies from 150 to 750 watts
- Conduction cooled versions available
- cPCI, µTCA or custom bus formats
- Modular design allows for customization with minimum cost/lead time
- Advanced airflow distribution through card cage

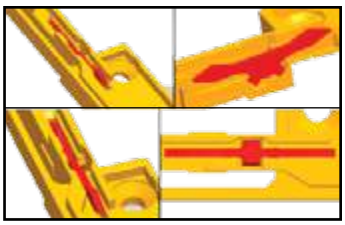
SCOPE OF SUPPLY

The all-aluminum ATRs are made from punched and formed sheet metal and milled plates. A removable front panel allows I/O customization to exact application requirements and increased configurability. The ATR enclosures use electrostatic dust filters, honeycomb EMI filters and a narrow screw spacing to seal off every external seam to ensure compliance to MIL-STD-461D. The rugged designs meet the requirement for shock, vibration and structural integrity per MIL-STD-810F, MIL-STD-167 and MIL-STD-901D.

ORDERING INFORMATION



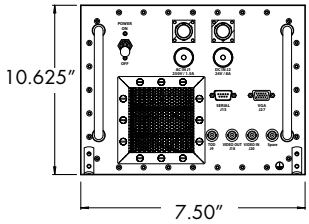
Description	Order Number
■ 3/4 ATR ■ Holds 6 AMC (single/Full-sized) ■ Star backplane: 6 AMCs, 1 MCH, 1 PM, 1 CU ■ 1 x hot swap CU, bottom to top airflow ■ 1 x 400W 90-230VAC input, PM (plug in) ■ MCH not included	ATR06S6KTBLVG4XXP



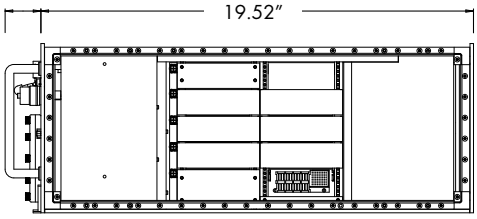
Anti-vibration Card Guide
(see page 129)

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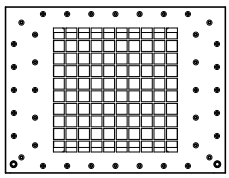
LINE DRAWINGS



Front View

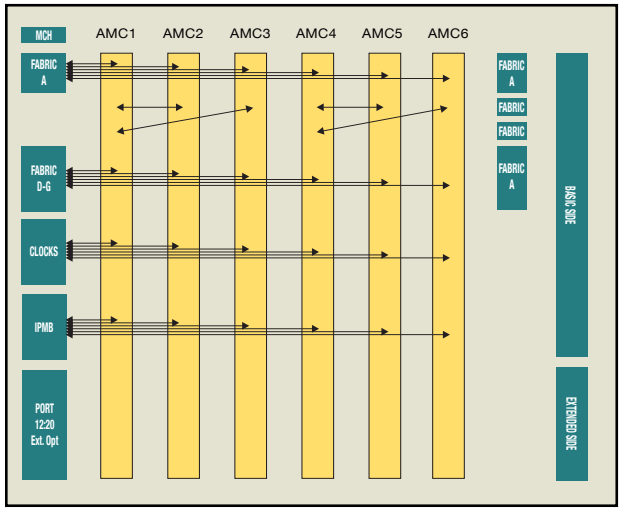


Side View



Rear View

BACKPLANE MAPPING



ENVIRONMENTAL

	Operating	Storage / Transit
Temperature:	0°C to +50°C	-20°C to +70°C
Altitude:	15000 ft.	50,000 ft. (15,240m)
Humidity:	0% to 95% Non condensing	0% to 95% Non condensing
Shock:	15 Gs @ 11ms	25 Gs @ 11ms (per ASTM 0775)
Vibration:	15-2000 Hz @ .1g2/Hz[RMS12G]	15-2000 Hz @ .1g2/Hz[RMS12G]
Agencies:	Designed to meet UL 1950, FCC Class A or B, CE	

CUSTOM CONFIGURATIONS

ATR ❑❑❑❑❑❑❑❑❑❑❑❑❑

❑❑ NUMBER OF AMC SLOTS
Example: 01 = 1, 10 = 10

❑ MODULE SIZE
S = Single Module
D = Double Module
Z = Combination
X = Not Installed

❑ MODULE SIZE (PITCH)
3 = Compact (3HP)
4 = Mid-Size (4HP)
6 = Full-Size (6HP)
Z = Combination

❑ FABRIC TOPOLOGY
K = Single Star
L = Dual Star
X = Not installed
Z = Custom

❑ HEIGHT
T = Tall
S = Short

❑ WIDTH
A = 1/2 (123.95mm)
B = 3/4 (190.5mm)
C = 1 (257.05mm)
D = 1 1/2 (390.65mm)

❑ DEPTH
L = Long (498mm)
S = Short (320.5mm)

❑ MODULE ORIENTATION
V = Vertical (Defaut Std)

❑ PSU INPUT
C = 90 - 230VAC (Fixed)
G = 90 - 230VAC (Plug in)
H = 48VDC (Plug-in)
K = 48VDC (Fixed)
M = Dual 48VDC (2xHS, N+1)
P = 90 - 230VAC(2 x HS, N+1)
X = No PSU
Y = 24V Plug in
Z = Dual 24V Plug in

❑ PSU OUTPUT
(NOT ALL PSU COMBINATIONS AVAILABLE)
2 = 200 - 299 watts
3 = 300 - 399 watts
4 = 400 - 499 watts
5 = 500 - 599 watts
X = Not Installed

❑ MCH
S = 200 - 299 watts
D = 300 - 399 watts
X = Not Installed

❑ JSM
Y = Installed
X = Not Installed

❑ COOLING
P = PUSH Cooling
R = Redundant Push-Pull
X = Not Installed

ECP - Embedded Computing Products

ELMA
Your Solution Partner

Elma's Embedded Computing Products, designed and marketed under the ACT/Technico brand, provides innovative solutions with best in class partner products, our own line of storage and I/O products, and over 100 man-years of system integration experience. We also provide ruggedized solutions to meet the most demanding environmental requirements. Certified to ISO 9001, the company supplies integrated embedded systems to companies in defense/aerospace, homeland security, semiconductor equipment, communications, energy, and transportation industries.

Elma Electronic is the premier electronic packaging expert and offers best in class embedded board level products and services. Experience enables us to provide you with the right embedded system platform for your program needs. To support this effort, we have a first-class offering of standards based products – single board computers, mass storage, networking, device drivers, and more. We take true COTS products, such as single board computers and PMCs, then enhance and qualify them to meet project requirements.

The next several pages offer a brief overview of the product categories and services available. Please visit our website or contact your sales representative for complete listings and further details.



Storage

Innovative Embedded Mass Storage Solutions

- Direct Attached Storage (DAS)
- Network Attached Storage (NAS) / RAID 0 - 5
- Removable drives / Hot Swap & FRU
- Data Security Solutions:
  - Secure-Erase
  - Write-Protect

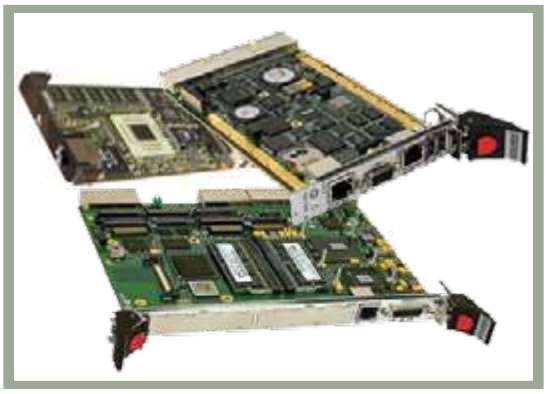
Drive Form Factors: 1.8", 2.5" & 3.5" & CF

- Rotating
- Solid state flash
- Optical (CD/DVD)
- Tape drives

Board Form Factors:

- PMC/XMC/AMC
- CPCI, PICMG 2.16
- ATCA & MicroTCA

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Single Board Computers & Blades

From legacy to latest technologies

Processors Supported:

- PowerPC
- PowerQUICC
- Intel architectures
- Single and multicore processors

Form Factors:

- CPCI, PICMG2.16
- ATCA, MicroTCA
- PrPMC/AMC

- COTS Ruggedization Program: Enhanced and/or modified standard products
- Extending board temperature ranges
- Conduction cooled



Networking

Full range of Ethernet solutions

Switches and controllers:

- Fast (10/100), Gigabit and 10 Gigabit Ethernet
- Up to 26 ports in a single slot
- Copper / Fiber (Optical)
- Layer 2 and full wire speed Layer 3
- IPv4 & IPv6
- Multicast / Unicast
- Standard, extended temp and conduction cooled versions

Board Form Factors:

- PMC/XMC
- CPCI, PICMG 2.16
- ATCA, µTCA



I/O Products

Wide range of available solutions

Functions:

- Audio and video
- Serial, parallel, binary
- Network Interface Controller (NICs)
- SCSI / ATA
- A/D and D/A channel converters
- 1553, ARINC
- Motion control, CANbus
- FPGA based

Form Factors:

- PMC / XMC / AMC
- 3U & 6U CPCI /PICMG 2.16

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AppliPaks SBC and I/O "Brick"

Level Application Development Systems

The Elma AppliPak is a bundled, single procurement source. When you need to ensure that the Single Board Computer you order from us works with specific mezzanines, we can provide the SBC and the modules in a "brick" assembly. We'll bundle the boards under a single model number, qualify and test the assembly before shipment. A typical bundle includes a PowerPC or Intel SBC; Windows, Linux or VxWorks; boot file and drivers; choice of mass storage on PMC or 6U boards, and I/O options such as SCSI, Ethernet, digital I/O and audio. An AppliPak may also include Rear Transition Modules or Breakout Boards. The bricks are available in standard and rugged versions.

Elma can extend the environmental capabilities of your AppliPak with mechanical enhancements, temperature screening, and conformal coating. Each unit is fully tested and a full documentation package is available, including qualifications, manufacturing and test data.



SystemPaks

Application Development System Platforms

This takes the AppliPak to the sub-system platform level by bundling the board set into a fully integrated and tested subsystem assembly, ready for application development. Available for all standard bus architectures, it is configured, tested and shipped in a chassis suitable for the environment in which it will be used.

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Subsystems

Integrated Sub-Systems

Our embedded sub-system solutions bring the bundle concept one step further, by providing the full range embedded package. They are designed to provide a complete platform upon which our customers build their integrated systems.

Typical systems might include powered chassis with SBC(s), mass storage, rear transition modules, audio and video modules, Ethernet or fabric switch(es), the operating system and any necessary drivers. We work with you to manage the project through it's entire life cycle.



Rugged Products

Standard COTS products enhanced for rugged environments

We can take true COTS products, such as single board computers and PMCs, then enhance and qualify them to meet project requirements. We offer a growing supply of conduction cooled boards as well as conformal coating for salt spray environments. We qualify boards and systems to the environmental standards of MIL STDs 810F, 901D and 167, and 461. We also design and prepare these products for barge testing.

We offer conformal coating per MIL STD I-46508 where required, and can extend the temperature range of COTS boards when needed.



Services

Designed to fully support the total embedded solution

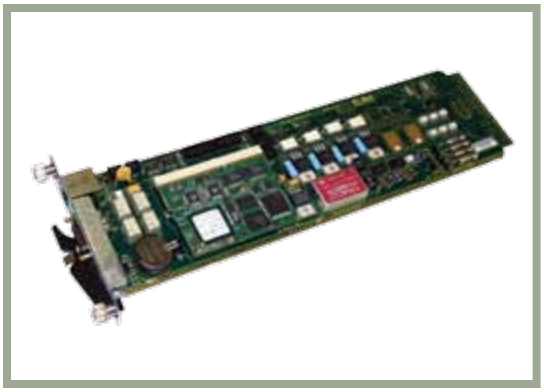
To support our efforts in providing you with the level of embedded solutions you require, we offer a full complement of services. A platform solution might include any or all of the following: design & build plans, procurement, full product documentation, test services and plans, manufacturing, software installation, project management such as inventory & spares maintenance.

We can do pcb and mechanical design, full doc package support, and testing services. We also offer OS configuration and install along with device drivers.

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IPM Shelf Manager - ATCA

ELMA
Your Solution Partner



FEATURES:

- 2.5U x 280mm deep, slim design
- Available in ATCA 3.X & PICMG 2.X version
- Bussed IPMI hot swappable design
- Incorporates Pigeon Point ShMM-500 module
- Dual IPMB, Serial (RS-232, and Dual Ethernet 10/100 inter faces)
- USB interface to facilitate shelf redundancy
- Incorporates JTAG interface
- Provides Telco alarm requirements
- Redundant operation with automatic switchover
- Monitors up to 12 Tach signals, 8 Fan Present signals, and 6 Air Filter Present signals
- Controls 4 Pulse Width Modulation signals (each signal can control from 1-4 fans) and up to 4 cooling zones
- Monitors up to 8 LM75 temperature sensors and up to 4 Power Entry Modules
- Fully RoHS compliant

SOFTWARE FEATURES _ ACTA

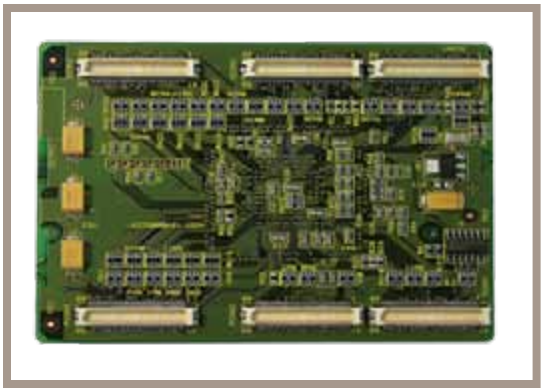
- Conforms to PICMG 3.0 & PICMG 2.9 Specifications
- Monitors activities within the shelf via the Intelligent Platform (through redundant IPMB for PICMG 3.0)
- Accepts and logs events posted by any intelligent FRU in the shelf (reflecting exceptions in tempuratures, voltages, etc.); posts alerts outside the shelf based on configurable IPMI Platform Event Filters
- Supports hot swapping of Field Replicable Units (FRU's), while maintaining full management visibility
- Interfaces to standard "Telco Alarm" infastructures, via dry contact relays
- Supports redundant Shelf Manager instances for high avail ability
- Integrates a watchdog timer, which resets the Shelf Manager if not periodically strobed; such resets automatically trigger a switchover to the backup Shelf Manager, if the shelf is config ured with 2 managers.
- Implements rich set of shelf-external interfaces accessible over Ethernet including remote Management Control Protocol(RMCP, required by PICMG 3.0) command line, web browser and Simple Network Management Protocol (SNMP

ORDERING INFORMATION

DESCRIPTION	PART NUMBER
ATCA ShMM-500, 280mm Board	CAE018540

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Bridges - cPCI



FEATURES:

- Bridge module for the rear side of the backplane (plug-able)
- Low profile bridge enables the use of off-the-shelf rear transition modules
- Does not interfere with the use of the rP3, rP4 or rP5 connectors
- This transparent cPCI to cPCI bridge must be used with Elma Bustronic backplanes
- Based on the Pericom P17C8154 PCI to PCI Bridge
- Compatible with the Intel 21154BE/AC/AE/BE drivers
- Compatible with Intel P21150 drivers
- Provides superior performance in multiple bridge environments and more robust tolerance to 3.3/5v power start up sequence, lower latency and better thermal resistance
- Allows concurrent bus transfers on both PCI bus segments
- Supports 3.3V or 5V input for bridge driver (onboard voltage regulator)
- Provides 7 clock signals for the secondary backplane
- Arbitration for 7 devices on the secondary backplane possible
- Bus width: 32-bit, 64-bit
- 6-layer printed circuit board
- Automatic detection 32/64 bit systems
- Available for use by systems with system slot on left or right
- Bus frequency: 33MHz or 66MHz
- Dimensions of bridge module (4 slots wide):
  - PCB height 95.13 mm
  - PCB width 74.81 mm
  - PCB thickness 1.8 mm
- System configurations with one bridge: 7 slot (primary) + 3-7 slot (secondary) backplane
- System configurations with two bridges: 7 slots (primary) + 7 slot (middle) + 3-7 slot (tertiary) backplane. These configurations are for 33 MHz operation fewer slots supported with 66 MHz operation
- The cPCI bridges are a proprietary product and can only be used with specific Elma Bustronic and Elma Trenew designs. Contact Elma for more information.

MECHANICAL SPECIFICATIONS

- PCB: UL recognized 94V-0
- Vibration: According to DIN 41640 part 15: 10Hz to 500Hz 5g rms
- Impact: (10 impacts per axis x,y,z) 50g, 6ms
- Layers: 6 layers
- Connector: Six 0.050" pitch 2-row mezzanine connectors

BOARD SPECIFICATIONS

- Layers: 6 layers
- PCB UL recognized 94V-O

ELECTRICAL/OPERATING SPECIFICATIONS

- Clock frequency: 33 to 66 MHz
- Bus width: 32-bit, 64-bit
- Impedance Z0 without connectors and daughter cards: 65Ohm +/–10%
- Possibility to use different VI/O voltage levels on primary and secondary back plane
- Onboard voltage regulator to supply 3.3V for the bridge driver
- JTAG interface according to IEEE1149.1

ORDERING INFORMATION

HEIGHT	WIDTH (mm)	THICKNESS (mm)	PART NUMBER
95.13	74.81	1.8mm	1940000260-000R (left)
95.13	74.81	1.8mm	1940000260-000R (right)

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System Monitor - SysMon Online Pro - cPCI



DESCRIPTION

The Sysmon OnlinePRO (SOP) is a platform-independent system monitoring unit which monitors- and, if necessary, controls - the internal parameters of a System Platform such as voltages, temperatures, digital inputs and fan speeds. The unit uses a 16-bit microcontroller with an integrated 12-bit A/D converter and suitable peripheral circuitry.

Any limit infringements (high or low) occurring for voltages V1 to V4, temperature and fan minimum speed are signaled via the front-panel LEDs. If indication of more than 4 voltages is required, the ELMA LED display (p/n CAE020004) can be connected to the SOP as an accessory and installed at any position in the system.

The measured values are retrievable at any time via the RS232 serial interface and via Telnet. In addition, limits and system parameters can be changed at any time with the unit in service. As a result, the SOP – and hence the connected system - can be controlled and monitored online via any computer with an Internet connection.

FEATURES:

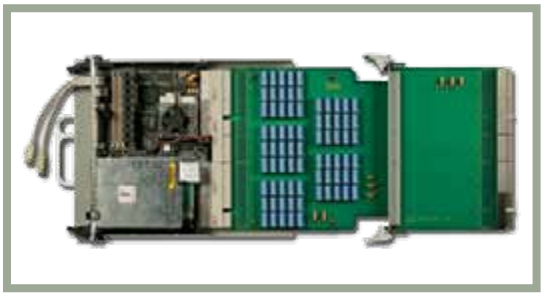
- Up to 8 voltages
- Monitors up to 14 temperature sensors
- Monitor and control up to 12 fans
- Ethernet interface: TCP/IP ! HTTP, Telnet protocol supported
- RS232 interface
- User configurable I/O pin
- Board mount for Eurocard configurations

ORDERING INFORMATION

CARD SIZE	ORDER NUMBER
Board Fixed	69-SYS-X16-OP
3U x 160mm	69-SYS-316-OP

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Test Extender Boards - cPCI • ATCA • µTCA



BOARD SPECIFICATIONS
- 12-layer stripline design (cPCI)
- 2 oz. copper power and ground
- PCB UL recognized 94V-O
- PCB FR-4 or equivalent
- PCB .062" thick

FEATURES: cPCI
- Designed to meet latest PICMG specification
- External ground planes for mechanical protection and EMI/RFI shielding
- IEEE 1101.10 compatible injector/ejector handles
- Test points for all lines on each 2mm HM connector in P1-P5
- Each line in rows A-E of the 2mm HM connector can be indi vidually switch isolated
- Metal frame securely holds test board in place
- Versions for VME/64X, VXS, and VPX also available

MECHANICAL SPECIFICATIONS
- 6U x 400mm



BOARD SPECIFICATIONS
- 10-layer stripline design (cPCI)
- 2 oz. copper power and ground
- PCB UL recognized 94V-O
- PCB FR-4 or equivalent
- PCB .062" thick

FEATURES: ATCA
- Mechanical extension of boards outside the chassis for testing
- Metal frame securely holds test board in place
- Designed to meet mechanical and electrical connection requirement of PICMG Rev. 3.0
- External ground planes for mechanical protection and EMI/RFI shielding
- The injector/ejector handles provide a secure and reliable connection to the chassis

MECHANICAL SPECIFICATIONS
- 8U x 711.2mm



DIMENSIONS
- Overall length (including guide rail at front): 30.8 cm
- Width (average): 7.35 cm
- Maximum Width: 8.55 cm

FEATURES: µTCA
- Complies with MicroTCA.0, AMC.1 R1.0, AMC.2 D0.96A
- Extends board outside of the card cage for easy test or de-bug
- Extends all fabric signals, 3 clock lines
- Virtually zero power consumption
- Metal frame holds board securely
- Management and payload power can be individually switch isolated

MECHANICAL SPECIFICATIONS
- 8U x 711.2mm

ORDERING INFORMATION

TYPE	HEIGHT	LENGTH	PART NUMBER
CPCI	6U	400mm	69-EXT-640-CPCI
ATCA	8U	711.22mm	69-EXT-870-ATCA
uTCA	3U	308mm	69-EXT-330-µTCA

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Load Boards - cPCI • µTCA



FEATURES: CPCI:

- Conforms to electrical and mechanical connections latest cPCI, or MicroTCA specifications.
- Verifies chassis can meet power requirement specifications
- Aids in locating hot spots in the chassis
- Visual GO-NO GO indicators for +5V, +3.3V, +12V, -12V, ACFAIL,
  SYSRESET, SYSFAIL, and GROUND
- CPCI primary voltage test points are V I/O, PRST#, FAIL#, and GND
- MicroTCA version is configurable to seven wattages: 0W, 20W, 30W, 40W, 50W, 60W and 70W
- Power supply loading can be controlled with front panel switches



FEATURES AMC: µTCA:

- Compliant to MicroTCA.0 specification
- Compliant to PICMG AMC.0: Advanced Mezzanine Card Specification R2.0
- AdvancedMC load board with IPMI support
- Single module, full size
- Configurable load by:
  - IPMI commands
  - Selectable button on front panel
  - Incorporates JTAG interface
- Dynamic, configurable load
- Redundant operation with automatic switchover
- On-board temperature sensors
- Order Number: 69-M-LB-AMC
- Power supply loading can be controlled with front panel switches

ORDERING INFORMATION

TYPE	HEIGHT	LENGTH	PART NUMBER
CPCI	6U	160mm	80-616-CLB-0000
AMC	3U	180mmmm	69-M-LB-AMC

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Rear Extender Boards - cPCI



FEATURES:

- Compliant to PICMG 2.0 Rev. 3.0 specifications
- 6U x 180mm form factor
- Extends rear I/O signal
- 12-layer controlled impedance stripline design
- Injector/ejector latches provide easy insertion and removal
- PCB FR-4 or equivalent, 0.125" thick

ORDERING INFORMATION

TYPE	HEIGHT	LENGTH	PART NUMBER
CPCI	REAR	6U / 180mm	69-EXT-610-R

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ATCA Probe Card



SIGNAL INTEGRITY ENGINEERING & TESTING

Faster PCB designs are by nature more sophisticated and delicate. At higher clock speeds, the PCB demands cleaner signal transmission without compromising the stability of the system. This is where Signal Integrity engineering comes into play. Simply put, signal integrity studies the design of high-speed circuits that can accommodate cleaner signals passing through them. Cleaner signals, in turn, enable engineers to identify and minimize sources of distortion in data transmission, which could otherwise disrupt timing of the digital logic. Signal integrity issues such as reflections, cross talk, frequency dependent transmission line loss and dispersion can significantly lead to poorer system performance propagating through the interconnect. These SI issues arise from via, power/ground coupling, RLC effects in signal lines, etc. With 3.125 Gbps to 6.250 Gbps signal speeds across the backplane and beyond, an AdvancedTCA backplane is very susceptible to these types of issues.

ORDERING INFORMATION

DESCRIPTION	PART NUMBER
Probe Card ATCA	69-PC-ATCA-XXXX

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COM, MCH



The two main functions of an MCH are system management (i.e. IPMI controlled power management, electronic keying, hot-swap of AMCs) and Ethernet switching. The MCH provides those functions for up to 6 AMCs - designed as a single PCB solution with one MCH tongue. Unlike in the telecommunication segment, where advanced feature sets require managed switches with complex control software, such features are not required in most industrial applications. The MCH contains an unmanaged BCM5396 Ethernet switch, which allows to simplify the design and to improve costs (lower cost components, no switch controller, no software for switch controller). Among the typical applications are image processing in the industrial environment or medical environment, industrial control systems, information systems for trains and simple communication systems without the need for managed switches. standard LED indicators, there are status LEDs for 13 GbE ports (Fabric [A] and MCH update channel) on the front, as well as RJ45 connectors for one management interface and one serial interface to access the management controller (MCMC).

For management functions the MCH contains a MCMC LPC2368 with IPMI software. The MCH supports IPMB-L links to up to 12 AMCs, I2C to the SEEPROM on the backplane, and I2C as well as IPMB-0 [A:B] links for power management and cooling. A JTAG connection is also provided.

The MCH represents a an MCH designed according MicroTCA.0 with a cost improved design. It supports the Kontron family of cost optimized MicroTCA platforms, as well as a range of other 3rd party platforms. The MCH helps customers to address with MicroTCA a broader range of applications. The choice of the MCH is a perfect fit for designing a complete and highly versatile MicroTCA platform that is cost-effective by focusing to the application needs.

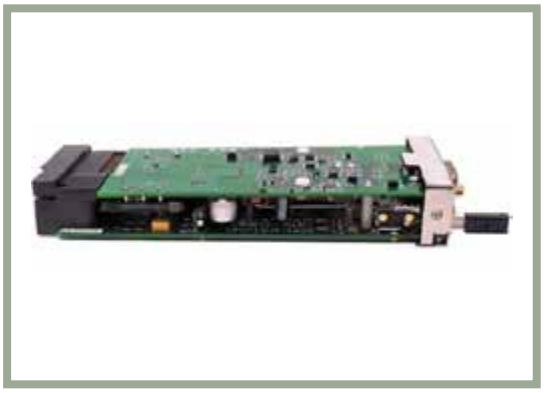
The MCH provides one GbE uplink on front, and on the edge connector 12x GbE for AMCs (Fabric [A]) plus 1x GbE for the MCH update channel.

ORDERING INFORMATION

SIZE	DESCRIPTION	PART NUMBER
Single, Mid	MCH	69-MCH-S4-CXXX

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Power Modules



DESCRIPTION

The MicroTCA Power Module serves as the interface between its MicroTCA system and the system power source and provides the following main functions:

- Accepts and conditions input power
- Converts and disributes power to MicroTCA Carrier Hub (MCH), AdvancedMC and Cooling Unit (CU)
- Monitors power, protects against faults and limits power consumption
- Works with MicroTCA Carrier Hub (MCH) to control and manage power
- 380 Watt
- 90 - 230VAC input
- Single module, mid - size

ORDERING INFORMATION

SIZE	DESCRIPTION	PART NUMBER
Single, mid	380 Watt, µTCA Power Mod	69-PM-S4-C3

EMMC (Enhanced Module Management Controller)



DESCRIPTION

EMMC is used for the management of cooling modules. The ELMA cooling units communicate according to the MicroTCA specification via IPMI messages with the MCH. The EMMC controls the fans in the fan cassette via PWM or two different analogue voltages.

FEATURES:

- Cooling unit EMMC with IPMI support
- Monitors up to eight 12V fans
- Support for up to eight LM75 temperature sensors
- Fan speed control by:
  - PWM signal
  - variable voltage (max 2A)
- On-board temperature sensors
- Board size: 115mm x28mm
- Op temp range: -10 deg c to 70 deg C
- Storage temp range: -40 deg C to 105 deg C

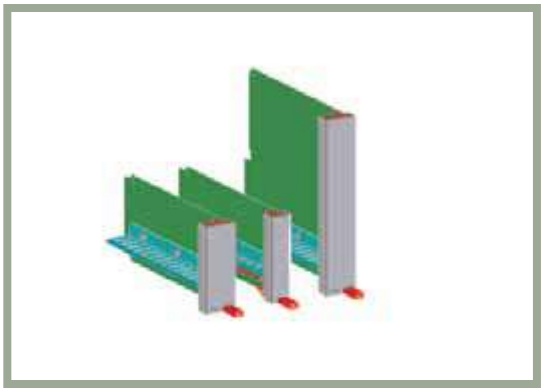
ORDERING INFORMATION

DESCRIPTION	PART NUMBER
Cooling Management	69-EMMC-XXXX

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Air Block Modules (Slot Bypass Board)





DESCRIPTION

The slot bypass boards fill unused slot positions in the system enclosure. Elma's bypass boards block airflow whenever there were empty slots in your enclosure and ensure airflow is directed to the occupied slots where it is needed. Made of rigid construction, our bypass boards act as an effective barrier while maintaining the integrity of the enclosure's airflow system. Ejectors and injectors are optional and make these boards easy to remove when you need the slots for system expansion. Elma bypass boards are available in all VITA & PICMG sizes. Insulated boards are also available standard. Metal versions can be specially ordered. Bypass boards are supplied in assembled form only.

FEATURES:

- Blocks airflow in unused slots
- Available for all Euro Card sizes (3U-9U, VITA & PICMG)
- Ejectors and Injectors available
- Plugs directly into empty slots
- Made of rigid construction
- Directs airflow properly for optimal system cooling

AIR BLOCK MODULES

AMC air block modules can be used to fill empty slots in the card cage and re-direct airflow.The modules block the air from the inserted slot and force it to adjacent slots. Thispro-vides 10-50% of adjustable redirected airflow. The units come in single/mid, single/full or double/full sizes.

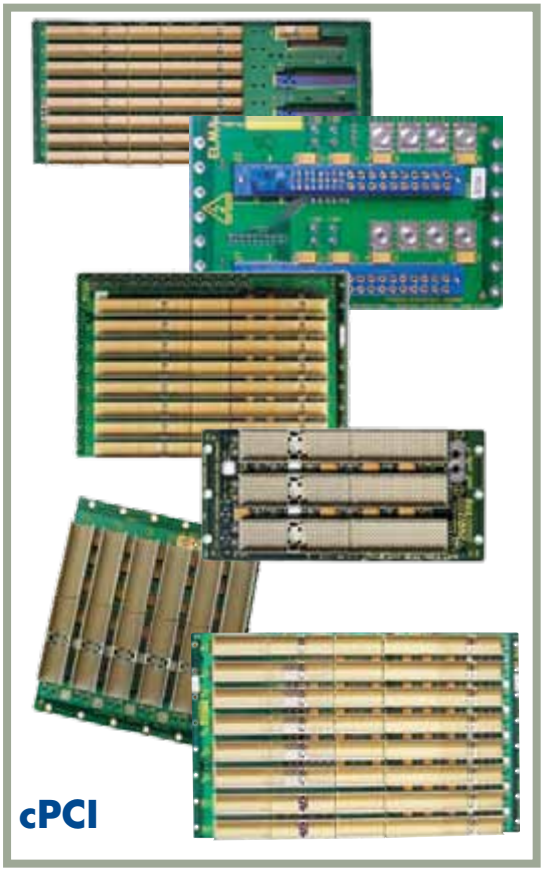
ORDERING INFORMATION

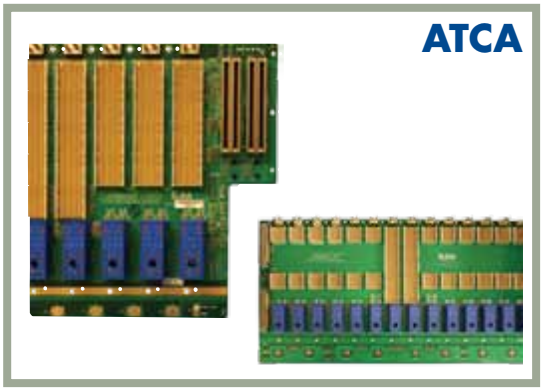
CARD SIZE	ORDER NUMBER
3U x 160mm, 4HP	80-316JB-00
6U x 160mm, 4HP	80-616JB-00
6U x 220mm, 4HP	80-622JB-00
6U x 340mm, 4HP	80-634JB-00
9U x 400mm, 4HP	80-940JB-00

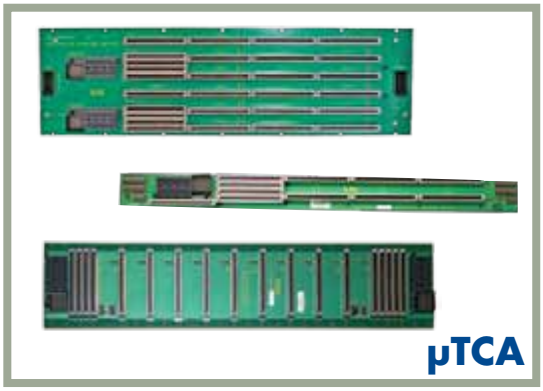
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Backplanes: CPCI • ATCA • µTCA

ELMA
Your Solution Partner







Elma Electronic Inc's backplanes are designed and manufactured in-house by the Elma Bustronic division. The company is also able to utilize the resources of Elma TreNew, a leading provider of backplanes in Germany, as well as Elma UK which offers customized backplanes through the Mektron brand.

Elma has been a leader in PICMG-based architectures and was the first in the market to develop PICMG 2.16 (Compact Packet Switching), PICMG 2.17 (StarFabric), and PICMG 3.0 (AdvancedTCA) backplanes. The company has also developed several innovations in AdvancedTCA high-speed designs, and MicroTCA configurations and styles. Elma's high speed backplane lines go though pre-design simulation and post-design characterization to ensure optimal signal integrity.

All Elma CompactPCI backplanes are designed to maximize performance, minimize noise, and give the customer the most reliable, cost-effective products possible. We typically incorporate a full stripline design, generously distributed high and low frequency decoupling capacitors, 2 oz. power and ground planes to minimize noise. Our standard design with two 2 oz. copper ground planes fully shield the backplane, minimize EMI/RFI emissions susceptibility, minimize crosstalk, and maximize power distribution. Measured results verify that Elma backplanes are among the quietest in the industry. We use stripline construction to eliminate a significant source of EMI/RFI radiation and give all signals similar characteristic impedances and minimal signal skew. All these items allow for significantly higher data transfer rates, since signal skew factors into the data transfer rate calculations four times.

For AdvancedTCA, Elma offers Dual Star and Mesh versions in various configurations. This includes pluggable shelf manager connectors that save space, allowing more backplane slots in smaller chassis sizes. As 40 Gbps and higher speeds come online, Elma has stayed ahead of the curve developing high-speed versions with key partners. The company has also utilized creative design concepts such as orthogonal rear links that allow significantly higher performance at a reduced cost.

For the widest offering of MicroTCA backplane configurations, look no further than Elma.
From Shelf, Pico, Cube, and MicroSlim versions, Elma has a solution for you. Our compression-mount connectors are more rugged, provide cleaner signals, and can be field replaceable. Elma's creative designs allow more modules in less space, maximizing performance density.

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BP SIGNAL INTEGRITY STUDIES

ELMA BACKPLANE SIGNAL INTEGRITY INITIATIVE (SII)

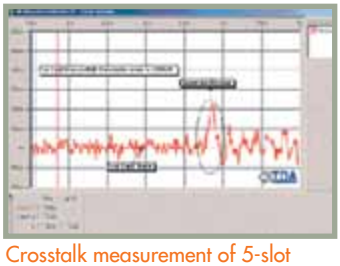
With gigabit per second signal rates across the backplane, signal integrity analysis is increasingly important. In short, simulation and characterization of the backplane helps us ensure the performance results of a design. For simulation, it gives us a chance to foresee the expected results of a particular backplane design with the option of viewing the results in relation with the system's boards. This helps us perfect the design before going to fabrication. When performing backplane characterization, we can measure the real signal integrity of the backplane. This ensures the backplane perform as expected before being shipped to the customer.

Elma uses the following tools:
- HSPICE
- P-CAD signal integrity
- Iconnect
- HP 54750 TDR
- Specially designed probe cards
- Agilent VNA



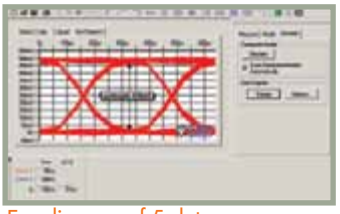
Characterization of 5-slot ATCA backplane using Elma Bustronic's unique probe card

Examples of possible measurement characteristics:
- Impedance for single ended and differential lines
- Cross-Talk
- Propagation Delay
- S-parameter
- Eye Diagram



Crosstalk measurement of 5-slot ATCA backplane

Examples of possible simulation characteristics:
- Impedance
- Cross-Talk
- Propagation Delay
- Attenuation
- Insertion & Return Loss
- Eye Diagram



Eye diagram of 5-slot ATCA backplane

HSPICE modeling and simulation is the industry's preferred methodology for full system simulation. TDA's I-Connect allows the modeling engineer to combine di ferential s-parameter models with SPICE-based semi-conductor and trace routing models in an overall SPICE-driven system simulation. The S-parameter models come from extracted empirical models captured by VNA and software driven TDT measurement techniques as well as the synthesized output of specialized 3D field solvers. The result is more accurately characterized via structures, much more capable connector models and a more precise representation of layout transition features and unavoidable stubs.

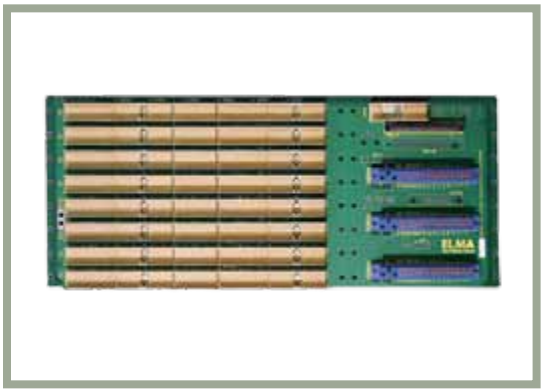
Measurement, model extraction, and simulation services Elma offers services to characterize the interconnect path and provide models of representative circuit paths. These models can be used to generate reports that confirm the performance of these backplanes and also allow full system simulations to be performed that will help in the design process. Elma can also provide the integration of measurement-derived models into the application engineering process. This includes the ability to easily generate eye-patterns based on the customer's specific requirements including such questions as signal degradation through backplane IO connectors and specific lengths of I/O cabling.

Further, Elma can provide measurement based models, purely synthesized models and simulation tools to provide design rules, suggest trace launch geometries and evaluate layer and laminate choices to the design engineers who are designing a new backplane.

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CompactPCI Backplanes - Easy Plug

ELMA
Your Solution Partner



FEATURES:

- Conforms to PICMG basic specification 2.0 R3.0
- PICMG Hot Swap specification 2.1 R1.0
- Versions conforming to PICMG 2.5 R 1.0, for Computer Telephony specification
- Controlled impedance stripline design
- Right or left justified system slot
- 47-pin power supply connectors - vertically mounted in 3U and 6U, horizontally in 9U
- Virtually zero crosstalk

MECHANICAL SPECIFICATIONS

- 3U - 8 slots
- 6U - 8, 14, 16 slots
- 9U - 2, 4, 6, 8 slots
- Height: 3U, 6U, 9U
- 64-bit (32-bit capable)

BOARD SPECIFICATIONS

- 10-layers, 8-layers (2-slot), PICMG 2.16 versions vary
- 2 oz. copper power and ground
- PCB UL recognized 94V-O
- PCB FR-4 or equivalent
- PCB .125" thick, .132" for H.110

ELECTRICAL/OPERATING SPECIFICATIONS

- Conforms to: IEC 68/1:25/085/21
- Operating temperature: –40 C to +85 C
- Storage temperature: –55 C to 85 C

ORDERING INFORMATION

SLOTS	HEIGHT	WIDTH	DESCRIPTION	PART NUMBER
CP • 64 Bit				
8	3U	7.999"	One 47-pin, vertical, system slot right	69-CP308-103R
CE • 64 Bit				
8	6U	8.000"	One 47-pin, vertical, system slot right	69-CE608-103R
14	6U	15.967"	Three 47-pin, vertical, system slot right	69-CE614-103R
16	6U	15.967"	Two 47-pin, vertical, system slot left	69-CE616-103L
2	9U	1.670"	One 47-pin, horizontal, system slot left	69-CE902-103L
4	9U	3.180"	Two 47-pin, horizontal, system slot left	69-CE904-103L
6	9U	4.700"	Two 47-pin, horizontal, system slot left	69-CE906-103L
8	9U	6.380"	Three 47-pin, horizontal, system slot left	69-CE908-103L
CH • H.110 Telephony				
14	6U	15.967"	Three 47-pin, vertical, H.110, system slot right	69-CH614-103R
16	6U	15.967"	Two 47-pin, vertical, H.110, system slot left	69-CH616-103L
2	9U	1.670"	One 47-pin, horizontal, H.110, system slot left	69-CH902-103L
4	9U	3.180"	Two 47-pin, horizontal, H.110, system slot left	69-CH904-103L
6	9U	4.700"	Two 47-pin, horizontal, H.110, system slot left	69-CH906-103L
8	9U	6.380"	Three 47-pin, horizontal, H.110, system slot left	69-CH908-103L

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CompactPCI Backplanes - Easy Cable



FEATURES:

- Conforms to PICMG basic specification 2.0 R3.0
- PICMG Hot Swap specification 2.1 R1.0
- Versions conforming to PICMG 2.5 R 1.0, for Computer Telephony specification
- 8-layer and 12-layer controlled impedance stripline design
- Superior power distribution
- Virtually zero crosstalk
- Logical slot #1 (system controller) is right justified

MECHANICAL SPECIFICATIONS

- 3U - 4, 6, 8 slots
- 6U - 3, 4, 5, 6, 8 slots
- 64-bit (32-bit capable)

BOARD SPECIFICATIONS

- 8-layer board (12-layer for H.110)
- 2 oz. copper power and ground
- PCB UL recognized 94V-O
- PCB FR-4 or equivalent
- PCB .125" thick (.132" thick for H.110)

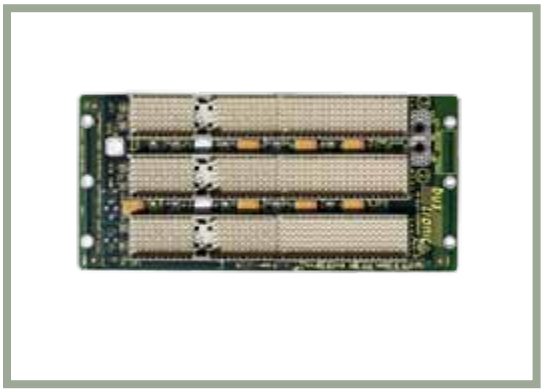
ORDERING INFORMATION

SLOTS	HEIGHT	WIDTH	DESCRIPTION	PART NUMBER
CP • 64 Bit				
4	3U	4.002"	system slot right justified	69-CP304-21VX
6	3U	5.602"	system slot right justified	69-CP306-21VX
8	3U	7.202"	system slot right justified	69-CP308-21VX
CE • 64 Bit				
3	6U	3.202"	system slot right justified	69-CE603-4157
5	6U	4.802"	system slot right justified	69-CE605-4157
6	6U	5.602"	system slot right justified	69-CE606-4157
8	6U	7.202"	system slot right justified	69-CE608-4157
CH • H.110 Telephony				
4	6U	4.002"	system slot right justified, H.110	69-CH604-4046
5	6U	4.435"	system slot right justified, H.110	69-CH605-4046
6	6U	5.602"	system slot right justified, H.110	69-CH606-4046
8	6U	7.202"	system slot right justified, H.110	69-CH608-4046

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CompactPCI Backplanes - Low Profile

ELMA
Your Solution Partner



FEATURES:

- Conforms to PICMG basic specification 2.0 R3.0
- PICMG Hot Swap specification 2.1 R1.0
- Versions conforming to PICMG 2.16 are available
- Versions conforming to PICMG 2.5 R 1.0, for Computer Telephony specification
- Designed to save a slot size of width, fit into low profile horizontal chassis
- 8-layer and 10-layer controlled impedance stripline designs
- Virtually zero crosstalk
- Allows flexible configuration of cards and power

MECHANICAL SPECIFICATIONS

- 3U - 3 slot
- 6U - 4, 6, 8 slots
- 7U - 2, 3 slots
- 32-bit, 64-bit (32-bit capable)

BOARD SPECIFICATIONS

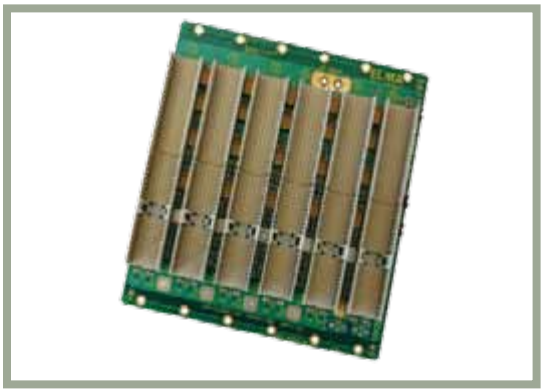
- 10-layers typical, 8-layers (2-slot), PICMG 2.16 versions vary
- 2 oz. copper power and ground
- PCB UL recognized 94V-O
- PCB FR-4 or equivalent
- PCB thickness (depth) varies

ORDERING INFORMATION

SLOTS	HEIGHT	WIDTH	DESCRIPTION	PART NUMBER
CB • 32 Bit				
3	3U	2.470″	cPCI only, 32-bit, right justified	69-CB303-105R
8	6U	6.380″	cPCI only, 32-bit, left justified	69-CB608-105L
PS • PICMG 2.16 - 1 FABRIC				
6	6U	4.708″	PICMG 2.16, 1 fabric, 5 nodes w/cPCI, right justified	69-PS608-00PX
8	6U	6.380″	PICMG 2.16, 1 fabric, 7 nodes w/cPCI, right justified	69-PS608-00PX
8	6U	6.380″	PICMG 2.16, 1 fabric, 7 nodes w/cPCI & H.110, right justified	69-PS608-00PH
CS • PICMG 2.16 - 2 FABRIC				
8	6U	6.380″	PICMG 2.16, 2 fabric, 6 nodes w/cPCI, 20-pin header, right justified	69-CS608-00PH
8	6U	6.380″	PICMG 2.16, 2 fabric, 6 nodes w/cPCI & H.110, right justified	69-CS608-00PX
CE • 64 Bit				
4	6U	3.180″	cPCI only, 20-pin header, right justified	69-CE604-105R
6	6U	4.760″	cPCI only, right justified	69-CE606-105R
8	6U	6.380″	cPCI only, left justified	69-CE608-105L
2	7U	1.670″	cPCI only, left justified	69-CE702-105R
3	7U	2.470″	cPCI only, ATX, right justified	105-CE703-105L
CH • H.110 Telephony				
8	6U	6.380″	cPCI & H.110, left justified	69-CH608-105L
2	7U	1.670″	cPCI & H.110, left justified	69-CH702-105L

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CompactPCI Backplanes - 32 Bit



FEATURES:

- Conforms to PICMG basic specification 2.0 R3.0
- PICMG Hot Swap specification 2.1 R1.0
- 8-layer controlled impedance stripline design
- Superior power distribution
- Virtually zero crosstalk
- Logical slot #1 (system controller) is right justified
- Comes in EasyCable and Low Profile versions

MECHANICAL SPECIFICATIONS

- 3U – 3, 8 slots
- 6U – 6, 8 slots
- 32-bit

BOARD SPECIFICATIONS

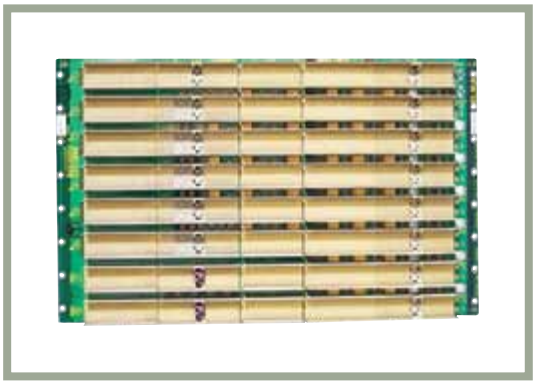
- 8-layer board
- 2 oz. copper power and ground
- PCB UL recognized 94V-O
- PCB FR-4 or equivalent
- PCB .125" thick (.128" for 3U 3-slot)

ORDERING INFORMATION

SLOTS	HEIGHT	WIDTH in.	WIDTH mm	DESCRIPTION	PART NUMBER
3	3U	2.361	59.569	Low profile, right justified	69-CB303-105R
8	3U	7.203	182.956	Easy cable, right justified	69-CB308-105R
6	6U	4.777	121.336	Low profile, left justified	69-CB606-105L
8	6U	6.377	161.976	Low profile, left justified	69-CB608-105L

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CompactPCI Backplanes - PICMG 2.16



FEATURES:

- Conforms to PICMG 2.16 specification
- Conforms to PICMG basic specification 2.0 R3.0
- Moves data via switched Ethernet fabric (10/100/1000 Mbit/s)
- Hot-swappable fabric slots in various configurations
- Optional power supply connector to power bugs
- Supports exisiting SBC's, Ethernet cards, and line cards
- 10-14 layer controlled impedance stripline design
- Versions with connections to IPM Sentry Shelf Manager
- Versions with and without H.110 telephony bus

MECHANICAL SPECIFICATIONS

- Slots: 4, 6, 8, and 16 slot sizes standard
- Height: 6U
- Ethernet and cPCI compatible

BOARD SPECIFICATIONS

- 10 layer boards (H.110-14 layers)
- 2 oz. copper power and ground
- PCB UL recognized 94V-O
- PCB FR-4 or equivalent
- PCB .134"(4,6,8,slots w/o H.110), .152" thick

ELECTRICAL/OPERATING SPECIFICATIONS

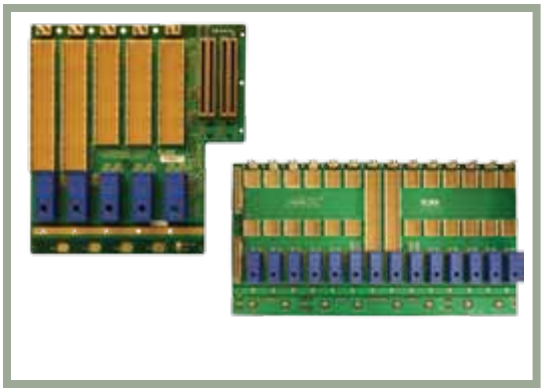
- Conforms to: IEC 68/1:25/085/21
- Operating temperature: –40 C to +85 C
- Storage temperature: –55 C to 85 C
- Tx/Rx pair impedance: 100 ohm +/- 10%

ORDERING INFORMATION

SLOTS	FABRIC /NODE	NODE w/PCI	NODE w/H.110	SYSTEM SIZE	PART NUMBER
PS • PICMIG 2.16 - 1 FABRIC					
4	1/3	3	0	6U x 16HP	69-PS604-00PX
6	1/5	5	0	6U x 24HP	69-PS606-00PX
6	1/5	5	5	6U x 24HP	69-PS606-00PH
8	1/7	7	0	6U x 32HP	69-PS608-00PX
CS • PICMIG 2.16 - 2 FABRIC					
8	2/6	6	0	6U x 32HP	69-CS608-00PX
8	2/6	6	6	6U x 32HP	69-CS608-00PH
16	2/16	13	8	6U x 84HP	69-CS616-00PH

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AdvancedTCA Backplanes - Mesh



FEATURES:

- Compliant to PICMG 3.0 Rev. 1.0 specification
- Gigabyte/Terabyte per second bandwidth per shelf
- Connections to IPM Sentry shelf manager
- Controlled impedance stripline design
- Dual star and 1X, 2X, 3X Mesh topologies are implementable)
- Optimized via signal integrity studies

MECHANICAL SPECIFICATIONS

- Slots: 2, 5, 14, 16 (other sizes available)
- Height: approx. 5U typical, 1.2" pitch

BOARD SPECIFICATIONS

- 18-layer board (5-slot Mesh)
- 2 oz. copper power and ground
- PCB UL recognized 94V-O
- PCB FR-4 or equivalent
- PCB .181" thick (5-slot Mesh), .171"(6-slot), .115" (2-slot)

ELECTRICAL/OPERATING SPECIFICATIONS

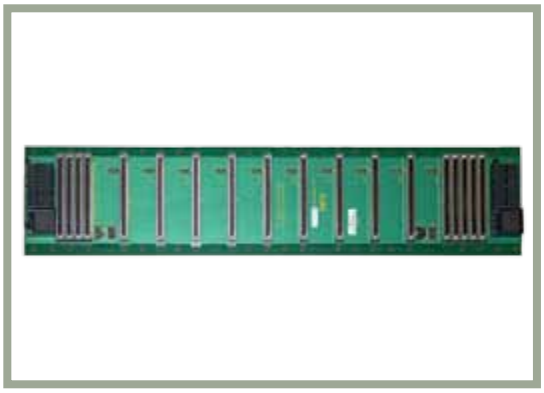
- Conforms to: IEC 68/1:25/085/21
- Operating temperature: –40 C to +85 C
- Storage temperature: –55 C to 85 C
- Tx/Rx pair 100 Ohm +/- 10 %

ORDERING INFORMATION

SLOTS	FABRIC SLOTS	NODE SLOTS	IPMB	FABRIC	PART NUMBER
2	All	All	Bussed	Rep Mesh	69-FJA02-502
5	All	All	Bussed	Rep Mesh	69-FJA05-506
6	All	All	Bussed	Rep Mesh	69-FJA06-50X
14	All	All	Bussed	Dual Star	69-FGA14-714

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MicroTCA Backplanes



FEATURES:

- Complies to MicroTCA.0 Specification Rev 1.0
- Slot to slot aggregate bandwidth of 5,000 Mbytes/sec
- Approximately 3U height
- Star Backplane
  -12 AMC, 1 MCH, 1 power module (full size)
- Dual Star Backplane
  -10 AMC, 2 MCH, 2 power modules (full size)
- Modular and serviceable
- Standard shelf management - MicroTCA Carrier Hub (MCH)
- Compression-mount connector easily replaceable
- Optimized via signal integrity studies, reports available upon request
- Other versions available in various configurations-compact and mid size, cube and pico style

MECHANICAL SPECIFICATIONS

- Slots: 10 AMC, 2 MCH, 2 Power Module slots (all full size)
- Height: 3U
- Full size modules
- Compression-mount connector standard

BOARD SPECIFICATIONS

- 26-layer board
- 2 oz. copper power and ground
- PCB UL recognized 94V-O
- PCB FR-4 or equivalent
- PCB .195" thick

ELECTRICAL/OPERATING SPECIFICATIONS

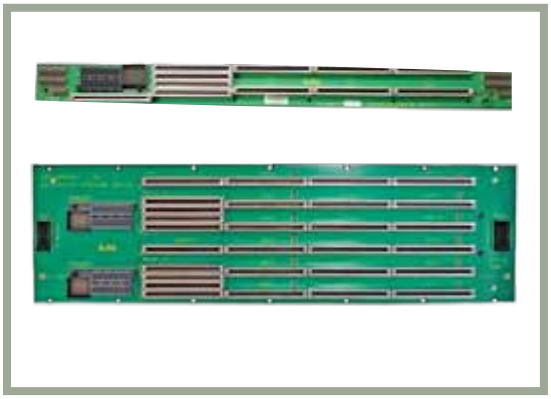
- Conforms to: IEC 68/1:25/085/21
- Operating temperature: –40 C to +85 C
- Storage temperature: –55 C to 85 C
- Tx/Rx pair impedance: 100 Ohm +/- 10 %

ORDERING INFORMATION

SLOTS	HEIGHT	DESCRIPTION	PART NUMBER
14	3U	10 AMC, 2 power, 2 MCH slots, all in full size	69-MK310-VP14
14	3U	12 AMC, 1 power, 1 MCH slot, all in full size	69-MK312-VP14
10	3U	6 AMC, 1 power, 1MCH slot, all in full size	69-MK306-VP10

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MicroTCA MicroSlim (TM) Backplanes

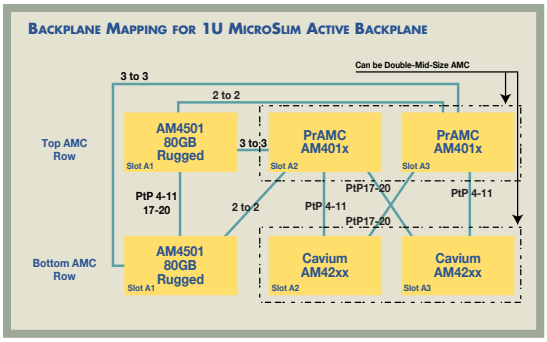


FEATURES:

- Complies to MicroTCA.0 Specification Rev 1.0
- Star and Dual Star Topology options
- Optimized via signal integrity studies
- Compression-mount connectors for improved performance, reliability and field replacement capability
- Passive and active versions available
- Active version has IPMB-0 intelligence for power and cooling unit installed across the backplane
- Active version has direct PCIe, GbE, XAUI and SATA connections

ACTIVE MICROSLIM BACKPLANES

The Active 1U MicroSlim Backplane is designed for low-cost MicroTCA systems with simplified power management. Instead of having IPMI management across all the FRU's, the active backplane has IPMB-0 for power and cooling unit management across the backplane. There are also direct PCIe, GbE, XAUI and SATA connections. The active backplane features a 4-pin power connector for a pluggable PSU and a control hander. There is a 12V to 3.3V converter on the backplane. But the payload and management power is managed, not distributed. Standard MCHs can be used with the active backplane.



MECHANICAL SPECIFICATIONS

- 1U, 3U heights
- Full size modules
- Compression-mount connector standard

BOARD SPECIFICATIONS

- 20-layer board (passive 1U), 14-layer board (active 1U), 24-layer board (3U)
- 2 oz. copper power and ground
- PCB UL recognized 94V-O
- PCB FR-4 or equivalent
- PCB .195" thick (passive 1U), PCB .167"

ELECTRICAL/OPERATING SPECIFICATIONS

- Conforms to: IEC 68/1:25/085/21
- Operating temperature: –40 C to +85 C
- Storage temperature: –55 C to 85 C
- Tx/Rx pair impedance: 100 Ohm +/- 10 %

ORDERING INFORMATION

SLOTS	HEIGHT	DESCRIPTION	PART NUMBER
9	1U	Passive: 6 AMC, 1 PM, 1 JSM, 1 MCH and 2 CUs (Cooling Units)	69-M-106-HP09
24	3U	Passive: 12 AMC, 4 HDD (w/SATA), 2 PM, 2 MCH, 1 JSM, 3 spare slots and 2 CUs (Cooling Units)	69-M-312-HP24
9	1U	Active: 6 AMC, 1 PSU connector, 1 MCH, and 2 CUs (Cooling Units)	69-M-106-HA09

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MicroTCA Cube Backplane



FEATURES:

- According to PICMG MicroTCA.0 Rev. 1.0
- Compression style connectors easily replaceable
- 6 AdvancedMCs, 1 MCH, 1 power module (all full size)
- 12-layer board
- Direct connections for storage protocols
- Support of direct pluggable IPMI controlled fan trays
- Support of all FRU (Field Replaceable Unit) functions
- Support of PCI Express due to Fabric Clock routing

ORDERING INFORMATION

SLOTS	HEIGHT	DESCRIPTION	PART NUMBER
8	6U	6 X AMC, 1 X MCH, 1 X Power	69-MK608-VP08

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MicroTCA ComBlue Backplane



FEATURES:

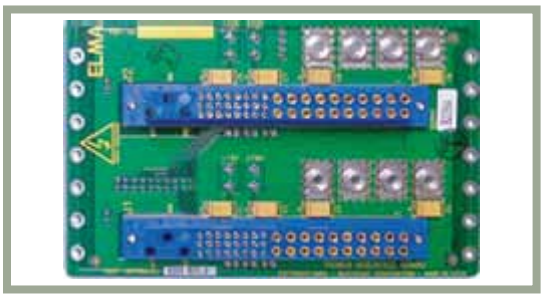
- High-speed routing is effected by means of single Star technology
- 12 layer structure
- A maximum of 5 single module AMCs (2 full size and 3 mid size modules)
- Support of all FRU (Field Replaceable Unit) functions
- IPMI controlled fan

ORDERING INFORMATION

SLOTS	HEIGHT	DESCRIPTION	PART NUMBER
5	4U	5 X AMC / 2 full and 3 md	69-MK405-VA05

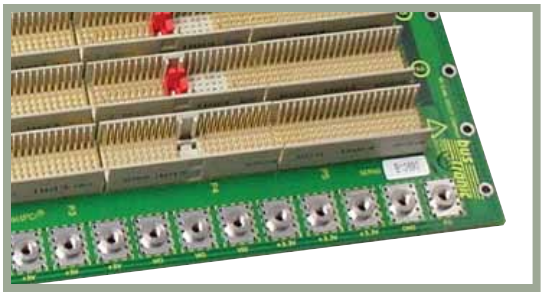
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CompactPCI - POWER DISTRIBUTION



EASYPLUG

EasyPlug CPCI backplane series features the 47-pin Positronic power connector. The 3U and 6U cPCI versions are standardly with the power connectors in a vertically oriented position. The 9U cPCI are standardly with the power connectors in a horizontally oriented position.



EASYCABLE

EasyCable cPCI backplane family is designed with the power insertion area beside the signal slots, allowing for easy and efficient system integration. Adequate numbers of 6/32 nuts and an ATX connector (for the 6U versions) have been inserted in this area to accommodate more power than the 28 amps required per slot. The ATX connector allows for an ATX power supply to be plugged in. The connector has 20 pins standard on our 6U CPCI backplane. The fastons have been added to allow additional power while taking a minimum of space. The blades are rated at 12A each.

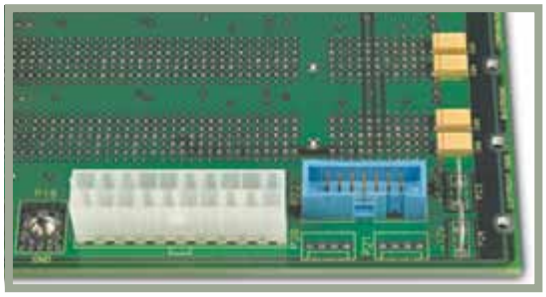


LOW PROFILE

Low Profile CPCI backplane series is designed with the 6/32 PEM studs distributed between the slots throughout the backplane. Adequate numbers of 6/32 studs and faston blades are available to accommodate more power than the 28 amps required per slot.

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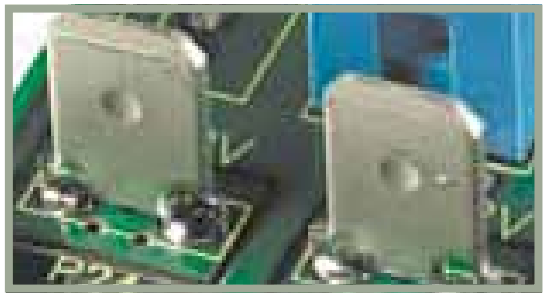
CompactPCI BACKPLANE - DESIGN ELEMENTS



ATX & Utility Connectors

SIGNAL LAYOUT

This design conforms to the PICMG basic specification 2.0 R3.0 and basic Hot Swap specifications 2.0 R1.0. A minimum stub length is utilized in routing and interconnecting to the signal traces. Our design techniques avoid crosstalk and noise caused by inadequate ground and power. Every backplane is designed with the customer's system in mind—ensuring the highest performance, reliability, and value.



Fastons



Power Bugs

JUMPERING

Jumpers can be installed to close a circuit. The backplane has labeled areas for jumper installation. The following applies to all of the CompactPCI and H.110 backplanes in 2-8 slot sizes. Configurations with 2-5 slots have an addition jumper consideration, the M66EN# jumper.

64-EN# JUMPER

If the jumper is installed, 64-EN# P2-B5 (see Hot Swap specification, PICMG 2.1) is ground, and 64-bit boards will initialize for 64-bit operation. If the jumper is not installed, 64-EN# is open, and 64-bit boards will initialize for 32-bit operation.

PS-ON# JUMPER

If the jumper is installed, pin 14 PS-ON# on the ATX power connector is grounded. The ATX power supply will turn on immediately when plugged in. If the jumper is not installed, pin 14 PS-ON# on the ATX power connector is open. The ATX power supply will not turn on when plugged in. The PS-ON# jumper pins may be used to wire an on/off switch for the power supply.

2-5 SLOT BACKPLANES ONLY: M66EN# JUMPER

If the jumper is installed M66EN# P1-D21 is ground and the backplane operates in 33MHz mode. If the jumper is not installed M66EN# is bussed and the backplane operates in 66MHz mode.

Backplane mapping for 1U MicroSlim active backplane

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ELMA
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CompactPCI - 64 BIT - P1 & P2 CONNECTORS

22	GND	GA4	GA3	GA2	GA1	GA0	GND	
21	GND	CLK6	GND	RSV	RSV	RSV	GND	
20	GND	CLK5	GND	RSV	GND	RSV	GND	
19	GND	GND	GND	RSV*	RSV*	RSV*	GND	P2
18	GND	BRSVP2A18	BRSVP2B18	BRSVP2C18	GND	BRSVP2E18	GND	/
17	GND	BRSVP2A17	GND	PRST#	REQ6#	GNT6#	GND	J2
16	GND	BRSVP2A16	BRSVP2B16	DEG#	GND #	BRSVP2E16	GND	
15	GND	BRSVP2A15	GND	FAL#	REQ5#	GNT5#	GND	
14	GND	AD[35]	AD[34]	AD[33]	GND	AD[32]	GND	
13	GND	AD[38]	GND	V(I/O)	AD[37]	AD[36]	GND	C
12	GND	AD[42]	AD[41]	AD[40]	GND	AD[39]	GND	O
11	GND	AD[45]	GND	V(I/O)	AD[44]	AD[43]	GND	N
10	GND	AD[49]	AD[48]	AD[47]	GND	AD[46]	GND	N
9	GND	AD[52]	GND	V(I/O)	AD[51]	AD[50]	GND	E
8	GND	AD[56]	AD[55]	AD[54]	GND	AD[53]	GND	C
7	GND	AD[59]	GND	V(I/O)	AD[58]	AD[57]	GND	T
6	GND	AD[63]	AD[62]	AD[61]	GND	AD[60]	GND	O
5	GND	C/BE[5]#	GND	V(I/O)	C/BE[4]#	PAR64	GND	R
4	GND	V(I/O)	BRSVP2B4	C/BE[7]#	GND	C/BE[6]#	GND	
3[3]	GND	CLK4	GND	GNT3#	REQ4#	GNT4#	GND	
2[3]	GND	CLK2	CLK3	SYSEN#	GNT2#	REQ3#	GND	
1[3]	GND	CLK1	GND	REQ1#	GNT1#	REQ2#	GND	
25	GND	5V	REQ64#	ENUM#	3.3V	5V	GND	
24	GND	AD[1]	5V	V(I/O)	AD[0]	ACK64#	GND	
23	GND	3.3V	AD[4]	AD[3]	5V	AD[2]	GND	
22	GND	AD[7]	GND	3.3V	AD[6]	AD[5]	GND	P1
21	GND	3.3V	AD[9]	AD[8]	M66EN	C/BE[0]#	GND	/
20	GND	AD[12]	GND	V(I/O0	AD[11]	AD[10]	GND	J1
19	GND	3.3V	AD[15]	AD[14]	GND	AD[13]	GND	
18	GND	SERR#	GND	3.3V	PAR	C/BE[1]#	GND	
17	GND	3.3V	IPMB_SCL	IPMB_SDA	GND	PERR#	GND	
16	GND	DEVSEL#	GND	V(I/O)	STOP#	LOCK#	GND	
15	GND	3.3V	FRAME#	IRDY#	BDS	TRDY#	GND	C
12-14				KEY AREA				O
11	GND	AD[18]	AD[17]	AD[16]	GND	C/BE[2]#	GND	N
10	GND	AD[21]	GND	3.3V	AD[20]	AD[19]	GND	N
9	GND	C/BE[3]#	IDSEL	AD[23]	GND	AD[22]	GND	E
8	GND	AD[26]	GND	V(I/O)	AD[25]	AD[24]	GND	C
7	GND	AD[30]	AD[29]	AD[28]	GND	AD[27]	GND	T
6	GND	REQ0#	GND	3.3V	CLK0	AD[31]	GND	O
5	GND	BRSVP1A5	BRSVP1B5	RST#	GND	GNT0#	GND	R
4	GND	IPMB_PWR	HEALTHY#	V(I/O)	INTP	INTS	GND	
3	GND	INTA#	INTB#	INTC#	5V	INTD#	GND	
2	GND	TCK	5V	TMS	TDO	TDI	GND	
1	GND	5V	-12V	TRST#	+12V	5V	GND	
Pin	Z[14]	A	B	C	D	E	F[9]	

APPLICABLE SPECIFICATIONS AND STANDARDS

- CompactPCI Core Specification: PICMG 2.0 R3.0
- IEEE Std 1101.1 - 1998: IEEE standard for mechanical core specifications for microcomputers using the IEEE std 1101.1-1991 equipment practice
- IEEE Std 1101.1 - 1991: IEEE standard for mechanical rear plug-in units specifications for microcomputers using IEEE 1101.1 and IEEE 1101.10 equipment practice
- IPMI specification V1.5 document revision 1.1
- IPMB specification V1.5 CompactPCI CT/H.110 connec tor: PICMG 2.5 R1.0 computer telephony specifications

25		SGA4	SGA3	SGA2	SGA1	SGA0	FG	
24		GA4	GA3	GA2	GA1	GA0	FG	
23		+12V	/CT_Reset	/CT_EN	-12V	CT_MC	FG	
22		PFS0#	RSVD	RSVD	RSVD	RSVD	FG	P4
21		-SELVbat	PFS1#	RSVD	RSVD	SELVbatRtn	FG	/
20								J4
19								
18		VRG	IN/C	IN/C	IN/C	VRGRtn		
17								
16								C
15		-Vbat	IN/C	IN/C	IN/C	VbatRtn		O
12-14								N
11		CT_D29	CT_D30	CT_D31	V(I/O)	/CT_FRAME_A	GND	N
10		CT_D27	+3.3V	CT_D28	+5V	/CT_FRAME_B	GND	E
9		CT_D24	CT_D25	CT_D26	GND	/FR_COMP	GND	C
8		CT_D21	CT_D22	CT_D23	+5V	CT_C8_A	GND	T
7		CT_D19	+5V	CT_D20	GND	CT_C8_B	GND	O
6		CT_D16	CT_D17	CT_D18	GND	CT_NETREF_1	GND	R
5		CT_D13	CT_D14	CT_D15	+3.3V	CT_NETREF_2	GND	
4		CT_D11	+5V	CT_D12	+3.3V	SCLK	GND	
3		CT_D8	CT_D9	CT_D10	GND	SCLK-D	GND	
2		CT_D4	CT_D5	CT_D6	CT_D7	GND	GND	
1		CT_D0	+3.3V	CT_D1	CT_D2	CT_D3	GND	
Pin	Z[14]	A	B	C	D	E	F[9]	

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CompactPCI Backplane Reference

CompactPCI - 64 BIT - P1 & P2 CONNECTORS

6U BACKPLANE TYPES

Backplane Characteristic	How to Identify
Dual CPU High Availability HotSwap (proprietary)	➢ Type AB rear shrouds on P3, P5 ➢ Two system slots with symbol
Standard Full Hot Swap per latest PICMG 2.0 R3.0+ PICMG 2.10 R1.0+ PICMG 2.1 R1.0	➢ Brown P4 key ➢ Type AB rear shrouds on P3, P5
H.110 / CT per PICMG 2.5 R1.0	➢ RED P4 key ➢ Type AB rear shrouds on P3, P5
Obsolete PICMG 2.0 R2.1 or earlier revision (non Hot Swap)	➢ NO P4 key installed ➢ Type B rear shrouds on P3, P5 ➢ Non Hot Swap P1 (P1 signal pins below key are same length)
Obsolete PICMG 2.1 R1.0 (Full Hot Swap)	➢ NO P4 key installed ➢ Type B rear shrouds on P3, P5 ➢ Hot Swap P1 Staging
64-bit Backplane	➢ Short tail P2 - no P2 rear shroud
32-bit Backplane	➢ Long tail P2 – w/ P2 rear shroud
5V V(I/O)	➢ BLUE P1 key
3.3V V(I/O)	➢ YELLOW P1 key

BACKPLANE CONNECTOR KEYS

Connector Key	Backplane Characteristic
BROWN P4 key	➢ P4 is rear I/O pass-through (no backplane connections to P4 signal pins)
RED P4 key	➢ P4 is H.110 / CT bus per PICMG 2.5 R1.0
P4 key NOT installed	➢ Obsolete backplane, not to latest specifications ➢ P4 may or may not have backplane busses
BLUE P1 key	➢ 5V V(I/O)
YELLOW P1 key	➢ 3.3V V(I/O)

CARD CONNECTOR KEYS

Connector Key	Backplane Characteristic
BROWN J4 key	➢ J4 is rear I/O pass-through (no backplane connections to P4 signal pins)
RED J4 key	➢ J4 is H.110 / CT bus per PICMG 2.5 R1.0
J4 key NOT installed	➢ Obsolete backplane, not to latest specifications ➢ J4 may or may not have backplane busses
BLUE J1 key	➢ 5V V(I/O)
YELLOW J1 key	➢ 3.3V V(I/O)
J1 key NOT installed	➢ Universal V(I/O)

COMPATIBILITY ISSUES

- Existing cards with J4 connectors but without a J4 key installed should not be plugged into any backplane with a P4 key other than a BROWN key

- Revision 1.0 CPU's that do not drive CLK5 and CLK6 will not work properly in a new 7 or 8 slot PICMG 2.0 R3.0 backplane: 1 or 2 slots will have no clock

- New PICMG 2.0 R3.0 rear transition modules with Type AB connectors will not plug into older backplanes with Type B rear shrouds for RP3, RP5

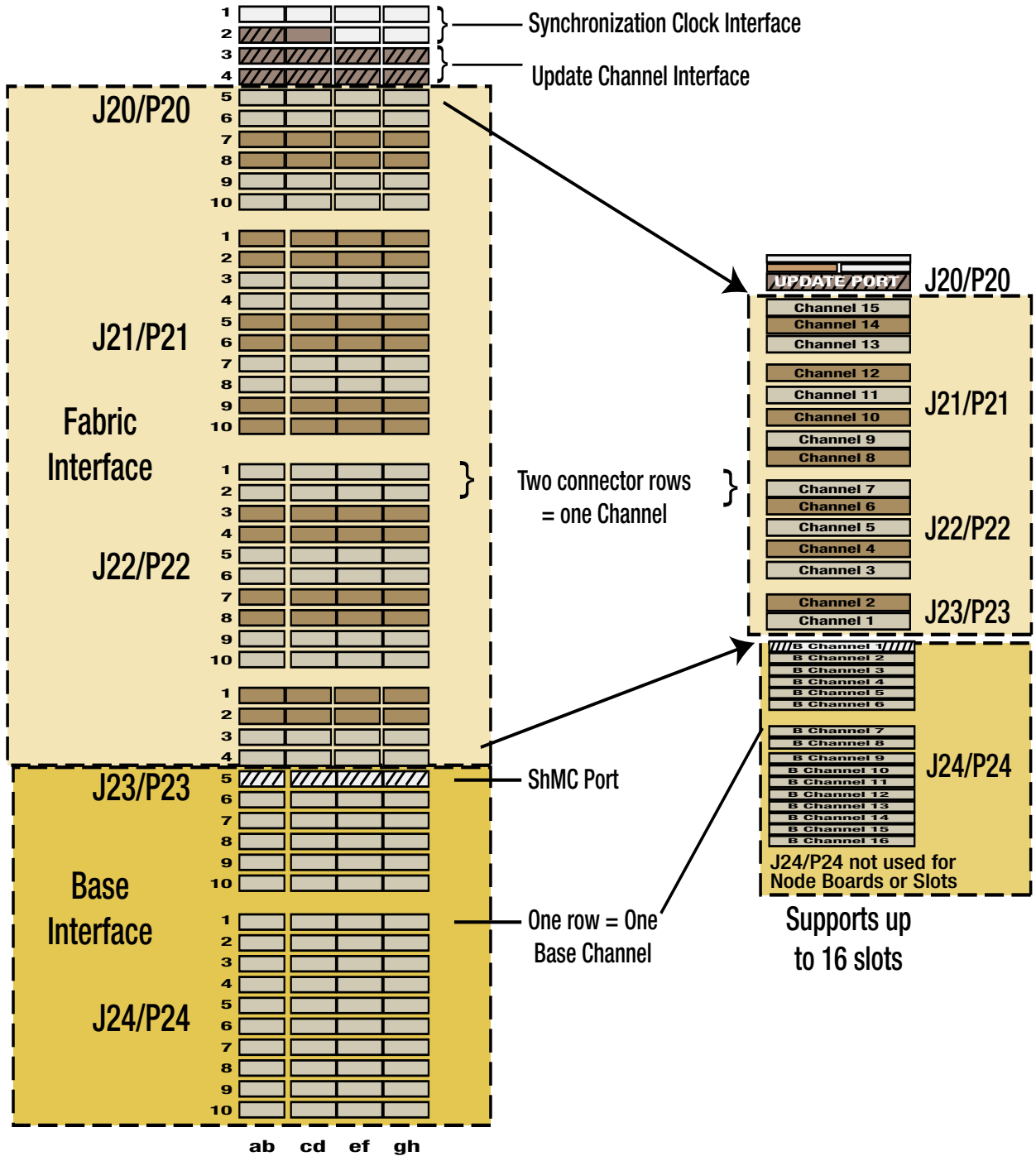
OTHER ISSUES

- RED card guide is used for system slot; also marked with symbol
- There are 3 levels of Hot Swap System Models:
- Basic hot swap (manual process). Does not use handle switch or blue LED on cPCI peripheral cards.
- Full hot swap (automatic, user initiated). Uses handle switch and blue LED on CompactPCI peripheral cards.
- High availability (HA) is outside the scope of current approved PICMG specifications, so it is also system vendor specific.

- Current Elma backplanes with 5 slots or less may be configured for 66MHz or 33 MHz operation via a jumper. All backplanes with more than 5 slots are fixed at 33 MHz operation per PICMG 2.0 R3.0

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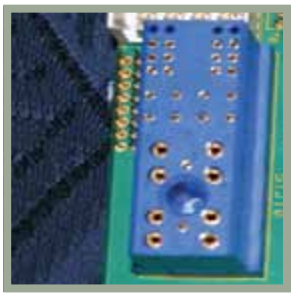
Channel Assignments - Logical Slots 1 & 2



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Power Studs



VBP Power Connector



ZD Signal Connectors

POWER DISTRIBUTION

The ATCA backplane family uses the Positronic VPB series, part number VPB30W8F9300A1. Adequate numbers of 48V 6/32 studs are distributed throughout the backplane.

Materials and Finishes - VPB

Insulator: Glass-filled polyester, UL 94V-0, blue color.
Contacts: Precision-machined copper alloy with gold flash over nickel plate.

Electrical Characteristics -VPB

Contact Current Ratings, per UL 1977 Size 16 Power
Contacts: 30 amperes continuous, all contacts under load.
Size 22 Signal Contacts: 2 amperes nominal rating.
Initial Contact Resistance;
Termination to termination:
Size 16 Contacts: 0.0022 ohms maximum,
Size 22 Contacts: 0.0085 ohms maximum, Per IEC 512-2, Test 2b.
Working Temperature: -55°C to +125°C.

Common Contact Position Function - VPB

1-16 Low Speed Hardware Management
17-24 High Voltage Metallic Test and Ringing Generator Signals
25 Shelf Ground
26 Logic Ground
27/32 Enables for A and B power
28 A Return
29 B Return
30 A Early
31 B Early
33 A Voltage 34 B Voltage

SIGNAL CONNECTORS

The ZD connector is designed to handle over 5 Gbps speeds over standard FR-4 PCB material. The design includes shielded differential pair signal pins for high-performance.

OTHER CONNECTORS

Shelf Management Connectors

Shmc1 connector goes to the Shmc port on slot 1. Shmc2 connector goes to the Shmc port on slot 2.

Metal and Ring Connectors

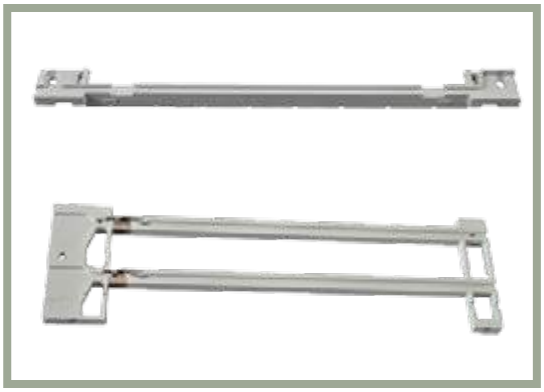
MT1 and MT2 are TYCO 880222-4. It mates to an EI Series receptacle with crimp termination, such as 172142-4 There is also an MT EI Series with IDC termination.

Ring Connector

The Ring connector is a Molex 71231-0005 which mates with the Molex 71694 and 5557 series.

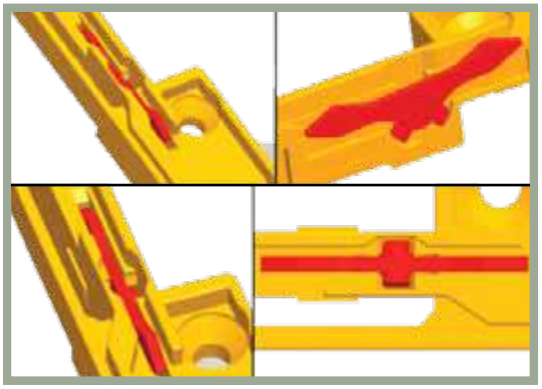
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Card Guides - Standard • Anti-Vibration



STANDARD

- Fits on extrusion 66-242-X
- Top and bottom use of card guide
- Plastic, UL94 V-0
- ESD clip can be assembled at front and rear



ANTI-VIBRATION

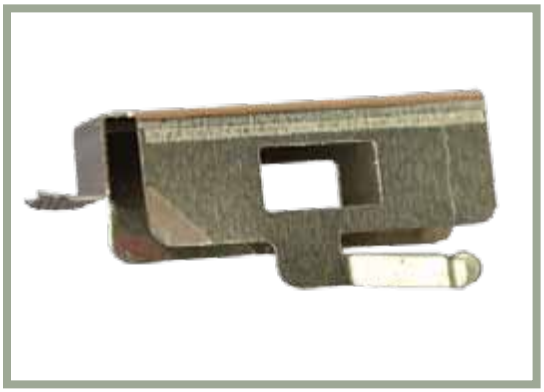
- Simple geometry for simple fabrication (milling or stamping
- Material - metal or polymer/plastic
- Wing = locking/clamping and addition centering mechanism
  - Two line contaact ares as support
  - Works like a technical compensator with flexible attributes
  - Can lock AdvancedMC Modules with normal Card Edge Interface and Moduls with MCH-Plug-Connector
  - Mechanism increases the operating safety

ORDERING INFORMATION

SIZE	DESCRIPTION	PART NUMBER
AMC	Standard	61-193-00-2
AMC	Anti-Vibration	61-193-00-2R

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MicroTCA ESD Clip



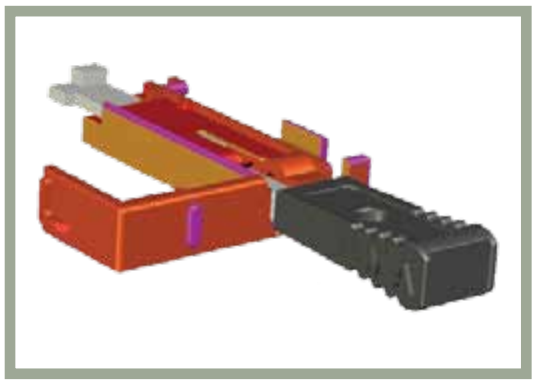
FEATURES:

- Fits on µTCA card guide 61-193-00
- Stainless steel
- Additional space for customer logo on top
- Logo integrated in die-cast is possible
- Extruded panel has improved aesthetics
- Machined or stamped panel cut-outs, tight radiuses

ORDERING INFORMATION

DESCRIPTION	PART NUMBER
µTCA ESD Clip	61-194-12

MicroTCA Handles/Panels



Elma offers standard and customized MicroTCA handles and front panels. With Elma's superior quality and precision milling, even the toughest of tolerances can be achieved.

FEATURES:

- Ergonomic design, grooves for easy handling
- Custom designs and colors available
- Additional space for customer logo on top
- Logo integrated in die-cast is possible
- Extruded panel has improved aesthetics
- Machined or stamped panel cut-outs, tight radiuses

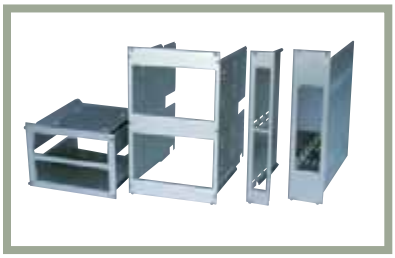
ORDERING INFORMATION

DESCRIPTION	PART NUMBER
µTCA Handle	CAE-1823

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DEVICE HOLDERS (EMC Shielded)



NUMBER OF DEVICES	LENGTH	ORDER NUMBER
1 x 3.5"	3U x 8HP	27C308-42
1 x 3.5"	4U x 8HP	27C408-41
2 x 3.5"	6U x 8HP	27C608-51
1 x 5.25" H.H.	6U x 12HP	27C612-11
1 x 5.25" H.H.	6U x 32HP	27C632-71
1 x 5.25" H.H.	4U x 12HP	27C412-11

CARD GUIDE END FEET (offset 2.54mm)



COLOR	CARD DEPTH	1 PIECE	100 PIECES
Black	160mm	61-950-01	61-950-01-2
Red	160mm	61-950-03	61-950-03-2
Black	80mm	61-949-01	61-949-01-2

CARD GUIDE END FEET (offset 2.54mm)



SIZE	POSITION	1 PAIR
1 x 3.5"	3U x 8HP	27C308-42

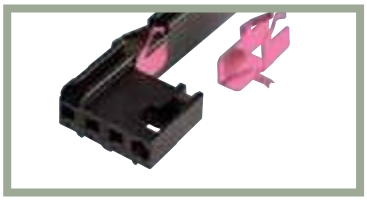
EXTRUSIONS



SIZE	1 PIECE
160mm	66-452-20
220mm	66-452-25
280mm	66-452-30
340mm	66-452-35

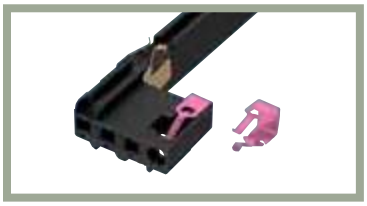
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ESD CLIPS (connecting printed board w/case)



DESCRIPTION	1 PIECE	100 PIECES
ESD clip front bottom/rear top	63-863	63-864
ESD clip front top / rear bottom	63-865	63-866

ESD SPRING (connecting ESD w/case)



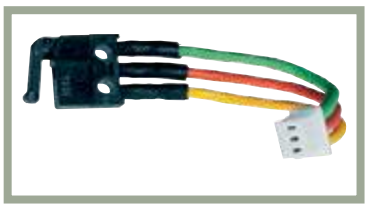
DESCRIPTION	1 PIECE	10 PIECES	100 PIECES
ESD Spring connecting	61-420	61-420-1	61-420-2

CODING PINS



COLOR	1 PIECE	100 PIECES
gray	81-054-02	81-054-02-2
red	81-054-03	81-054-03-2

MICROSWITCH



COLOR	1 PIECE	10 PIECES	100 PIECES
Black	81-088	81-088-1	81-088-2

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TELECOM HANDLES (standard)



COLOR	CARD DEPTH	1 PIECE	100 PIECES
Black	top	81-205	81-205-2
Black	bottom	81-206	81-206-2
Gray	top	81-207	81-207-2
Gray	bottom	81-208	81-208-2

TELECOM HANDLES (offset 2.54mm)

COLOR	CARD DEPTH	1 PIECE	100 PIECES
Black	top	81-186	81-186-2
Black	bottom	81-187	81-187-2
Gray	top	81-188	81-188-2
Gray	bottom	81-189	81-189-2

HOT-SWAP HANDLES (standard)



COLOR	CARD DEPTH	1 PIECE	100 PIECES
Black	top	81-095	81-095-2
Black	bottom	81-096	81-096-2
Gray	top	81-097	81-097-2
Gray	bottom	81-098	81-098-2

HOT-SWAP HANDLES (offset 2.54mm)

COLOR	CARD DEPTH	1 PIECE	100 PIECES
Black	top	81-182	81-182-2
Black	bottom	81-183	81-183-2
Gray	top	81-184	81-184-2
Gray	bottom	81-185	81-185-2

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cPCI front panels, aluminum version 2.5mm front side anondized, rear conductive

HEIGHT	4HP	8HP	12HP
3U	66-544-23	66-548-23	66-552-23
6U	66-544-26	66-548-26	66-552-26

Filler panels

COLOR	CARD DEPTH	1 PIECE	100 PIECES
4	66-544-83	-----	66-544-86
6	66-548-83	-----	66-548-86
12	66-552-83	-----	66-552-86
20	------	21D420-50	-----
24	-----	21D424-50	-----
48	-----	-----	21D648-50
56	-----	-----	21D656-50
64	-----	-----	21D648-50

Voltage I/O Jumper

COLOR	VOLTAGE	ORDER NUMBER
Red	5V	E800734
Violet	3.3V	E800735

Voltage I/O coding keys

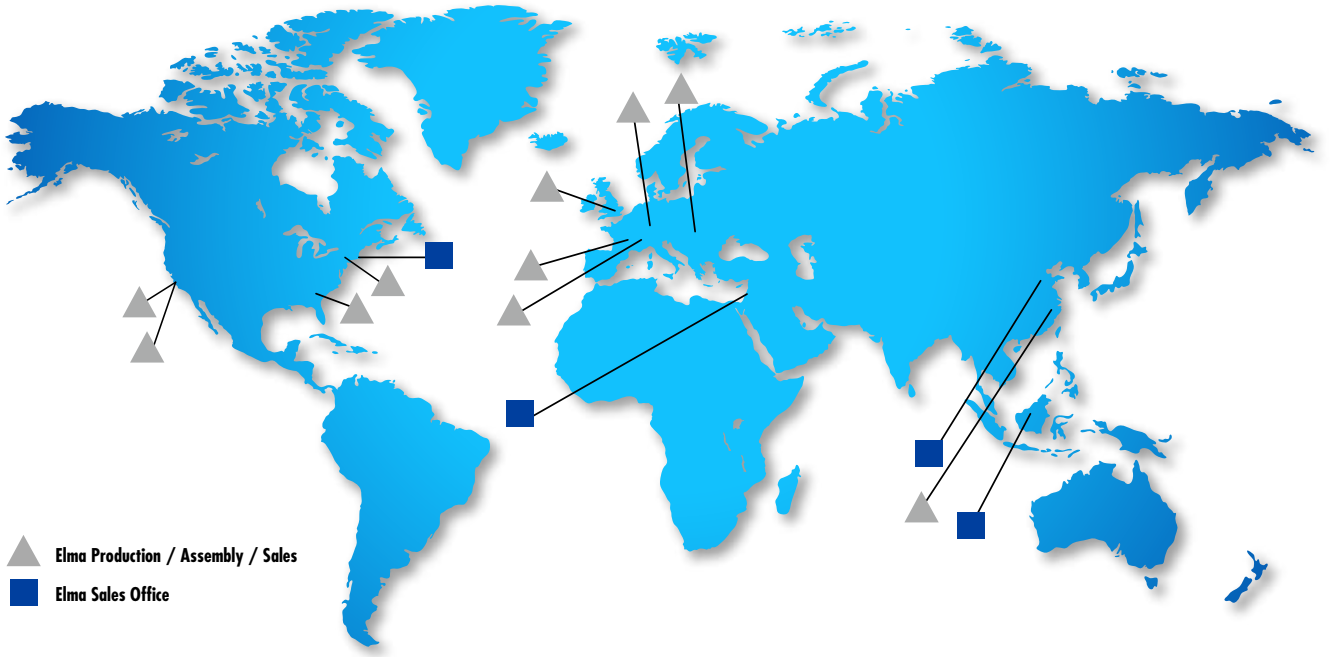
COLOR	VOLTAGE	ORDER NUMBER
Red	5V	E800734
Violet	3.3V	E800735

System monitor

COLOR	ORDER NUMBER
3U	69-450-30
4U	69-450-40
6U	69-450-60

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