Conduction Cooled Assembly for Standard 3U cPCI Cards

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Product Highlights

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Options

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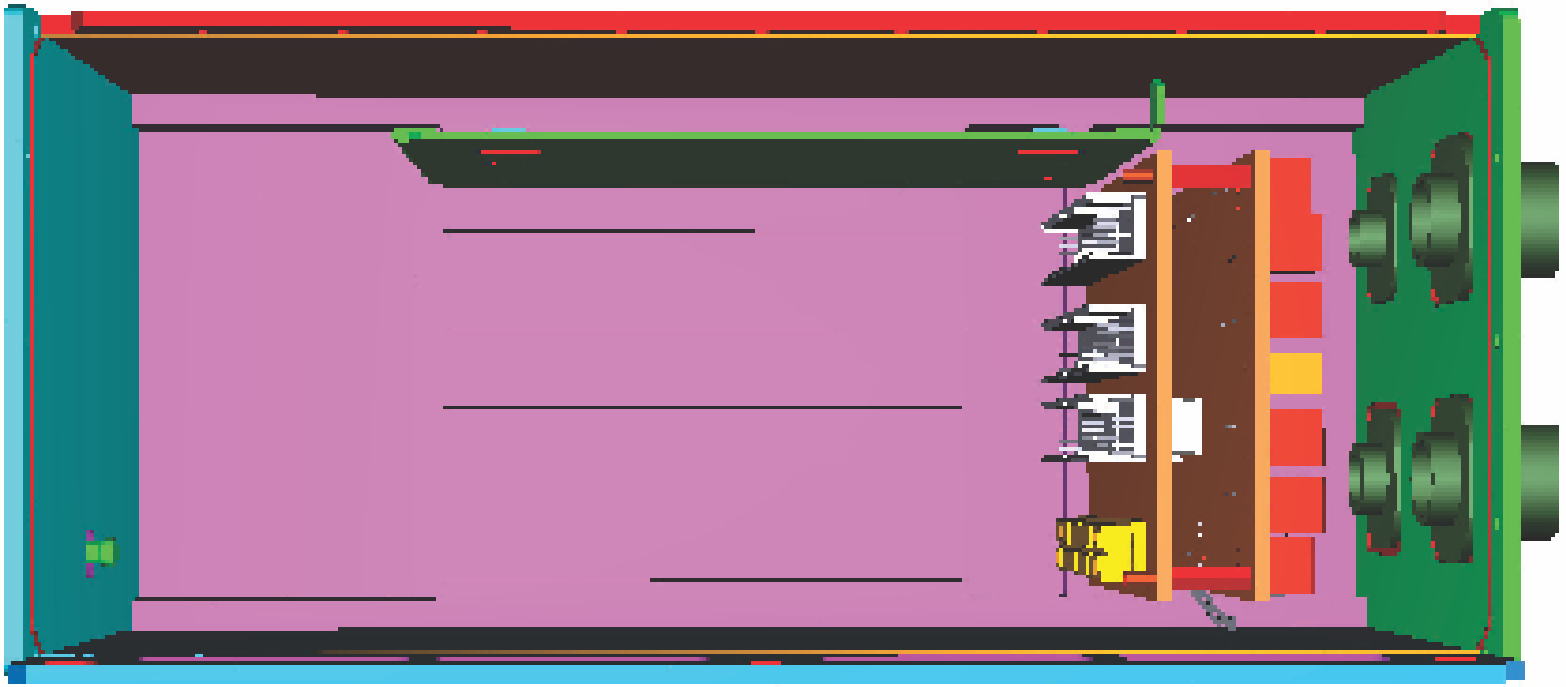
Product Highlights

- Robust and sealed enclosure for 3U standard CompactPCI cards
- Integrated wide-range PSU (9 - 36V, 35W)
- 3-slot CompactPCI backplane
- 4 MIL-C-38999 connectors (66 pins total)
- -40°C to +70°C operating temperature
- IP65 protection class
- Completely EMC sealed
- EN 50155 qualified (and comparable standards)
- Dimensions: 200 mm x 350 mm x 145 mm

Inside the Box



Front Connector Wiring Section

Card Mounting Section

Rear I/O Section

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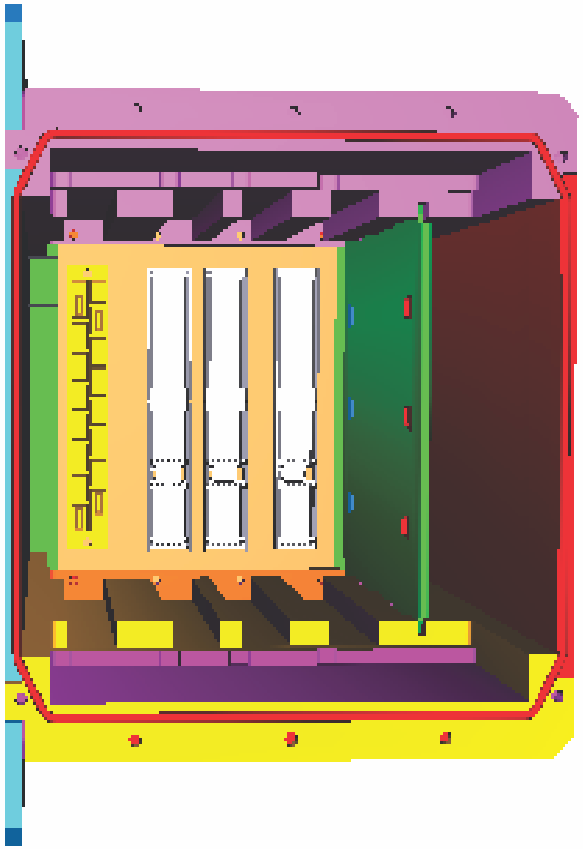
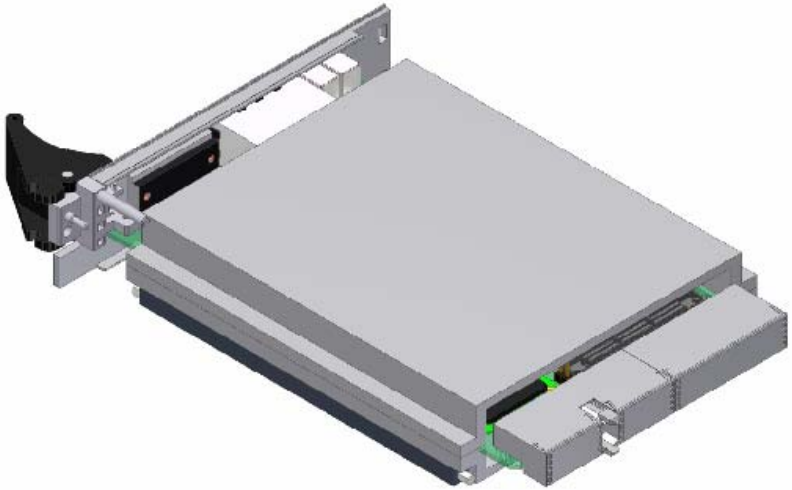
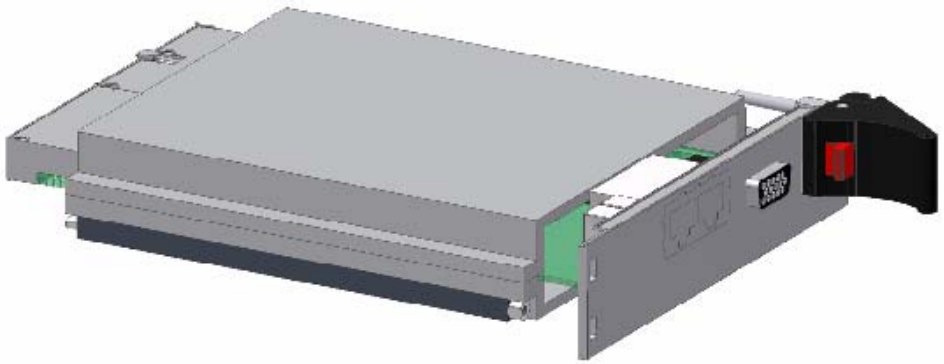
Inside the Box (2)





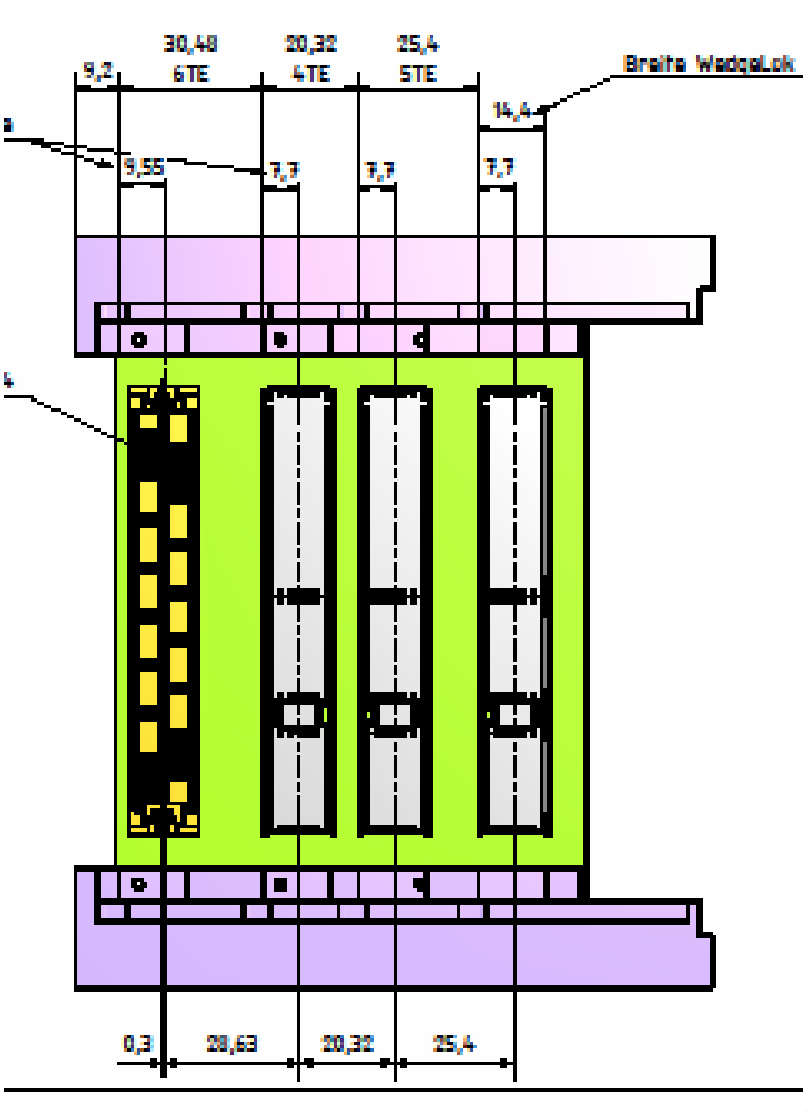
Mechanical Details

- All 3U convection cooled boards can be converted to 3U CCA version by adding a CCA frame
- Outer dimensions of CCA frame is MEN standard and matches CCA enclosure → 5 HP slot spacing
- Inner shape of CCA frame is specific to the cooling requirements of the board inside (hot spots need thermal contact to the CCA frame)
- Mechanical fixing and thermal coupling of CCA frame to enclosure via wedge-lock technology



Mechanical Details (2)

- H15 connector compatible to 0712-0002/3/4
- System slot left
- Connector spacing allows for
  - Single slot SBC
  - Fxx plus F6xx side card
  - Extra I/O card in rightmost slot
- Slot 0 and slot 1 need common front panel due to 4 HP spacing between SBC and side card



Mechanical Details (3)

- Rack is equipped with 4 MIL-C-38999 connectors
  - 7 pins for power supply
  - Total of 59 pins for custom I/O
- Unique mechanical coding ensures foolproof installation
- Wiring of connectors is always specific to application requirements
- Connectors can be wired to front of the boards or to rear I/O

Thermal Characteristics

- Total thermal resistance R_{th} of assembly: 0.4 Kelvin/Watt
- Calculation formula

$$\Delta T = T_{in} - T_{amb} = P_v * R_{th}$$

Example calculations:

Given the installed electrical power of 22 W and an outside temperature of 60°C, what would be the component temperature?

$$T_{in} = P_v * R_{th} + T_{amb} = 22\ W * 0.4\ °C/W + 60\ °C = 68.8\ °C$$

Given a max. component temperature of +85°C and an ambient temperature of +70°C, how much electrical power can be installed inside the CCA?

$$P_{vmax} = \Delta T / R_{th} = 15\ K / 0.4\ K/W = 37.5\ W$$

USPs

- MEN CCA rack can host off-the-shelf 3U cards for convection cooling
  - ⇨ MEN has a large catalog of these products
- ”Real“ CCA cards (VITA 30.1 conforming) are more expensive
- Cards for convection cooling offer 20-30% more space than VITA conforming products
  - ⇨ This feature is quite relevant for the small 3U format
- Standard product offers immediate availability for prototyping

Options

Part number of standard product: 0701-0054

- Different external connectors
- I/O options
  - Individual signal routing to external connectors
  - Individual rear I/O board
- Different PSU (9 to 154 V DC, 0712-xxxx)
- More slots imply
  - New backplane
  - New dimensioning of the metal parts
- Different mounting orientation
  - Implies redesign of cooling fins

Thank you for your attention!

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Our mission is to provide embedded computing and I/O solutions for demanding industrial applications while maximizing innovation, reliability and flexibility.

As a member of the UN Global Compact Initiative, MEN is committed to follow the principles of human rights, labour, environment and anti-corruption as defined by this organization.

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