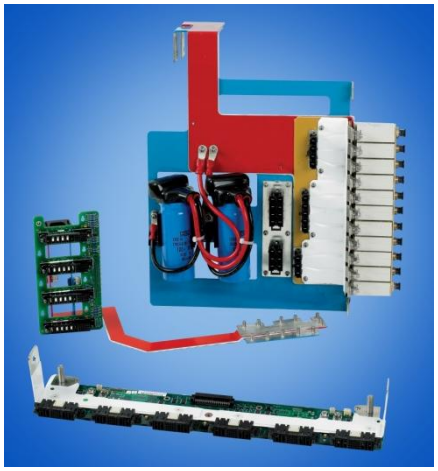
FCI Power Solutions℠ Overview

John Dodds – Global Product Marketing Manager

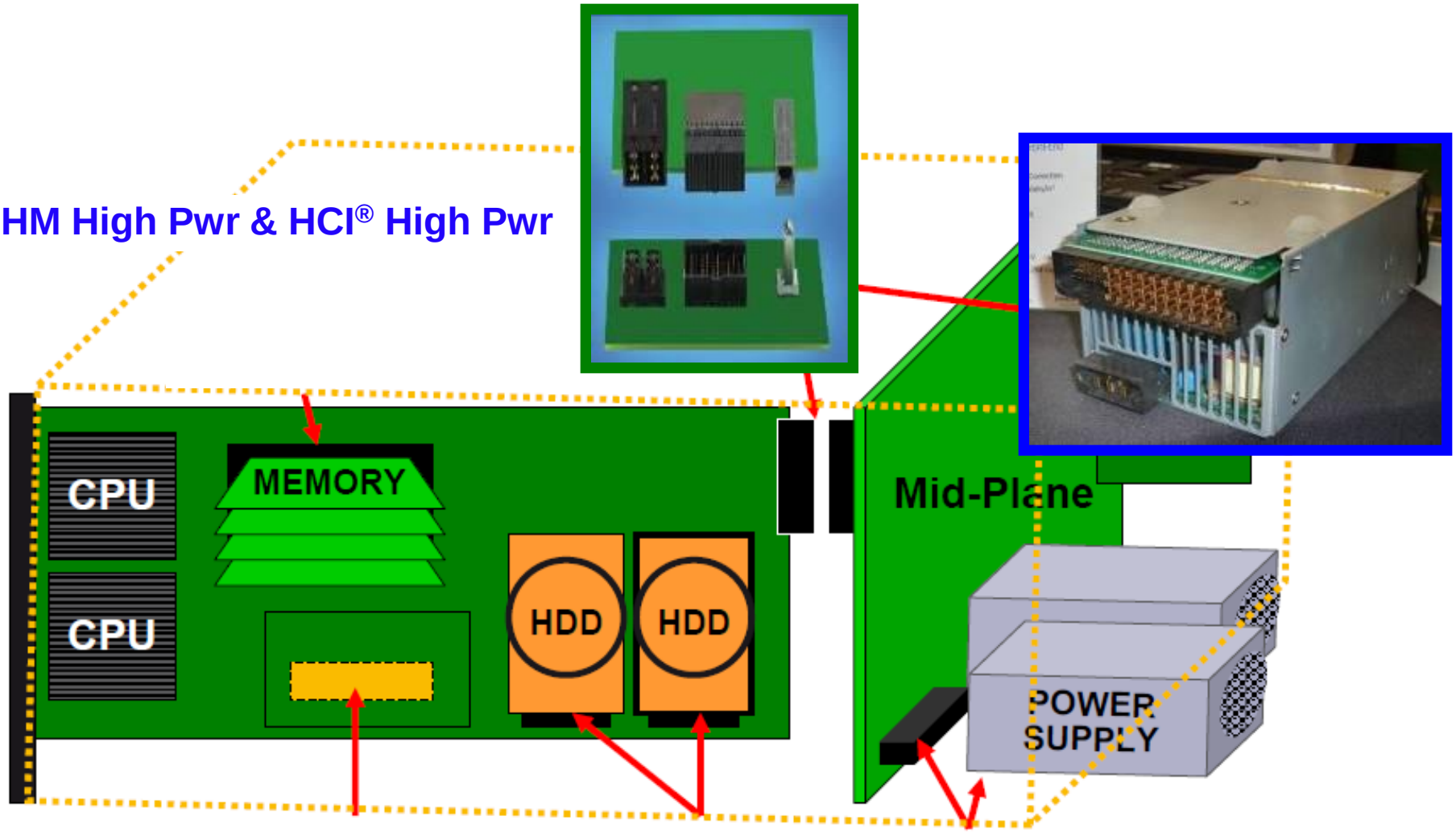
What is a “Power Solution”?

- *Power solution can be a power connector, power cable, bus bar or terminal block*
- *What is considered “power”?*
  - ***For FCI, anything > 5 – 10 A/contact to > 100 A/contact; typically low voltage (< 48V)***
- *Why sell power?*
  - ***All applications use it in one form or another***
  - ***FCI has approximately 60% market share in board-to-board and cable-to-board power***
  - ***Power Solutions has enjoyed significant market growth every year even during the 2008 – 2009 economic downturn***
  - ***FCI has license agreements with TE Connectivity for PwrBlade® (Multi-Beam XL™) & PwrBlade+ ® (Multi-Beam XLE™)***
    - ***Many opportunities for part cross referencing***



Power Solutions

Typical System Architecture



Target Power Markets

- *Medical*
  - ***Imaging equipment (CT, MRI, etc)***
  - ***Test Equipment***
  - ***Advanced workstations***
- *Industrial & Instrumentation*
  - ***Programmable Logic Controllers (PLCs)***
  - ***Test Equipment***
  - ***Metering Equipment***
  - ***Industrial Workstations***
- *Renewable Energy*
  - ***Solar/Wind Inverters***
- *Data*
  - ***Servers – Rack & Blade***
  - ***Storage Systems***
- *Communications/Networking*
  - ***Transmission, Switching & High Speed Routers***
  - ***Mobile Base Stations***
  - ***Access Equipment (xDSL)***

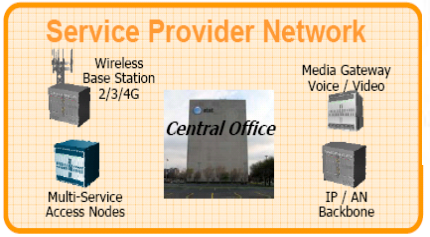
CT Equipment

PLC

Central Inverter- Solar

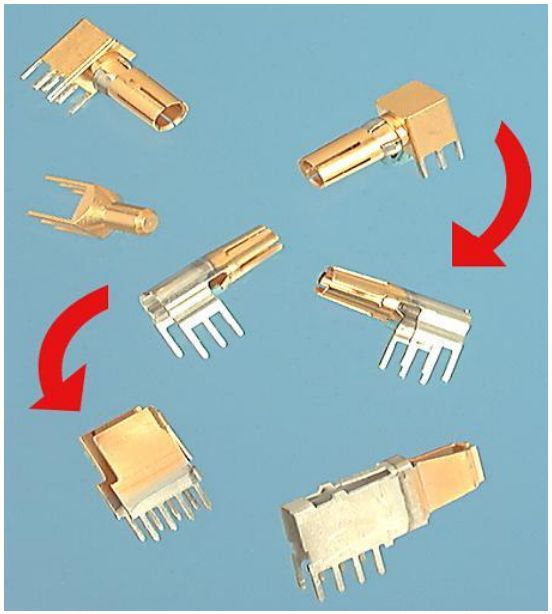
Smart Meters

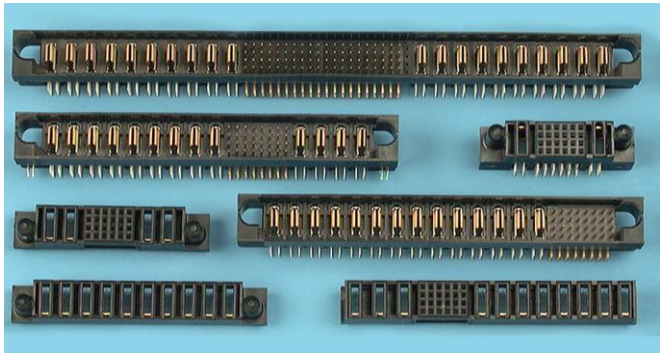
Enterprise Server

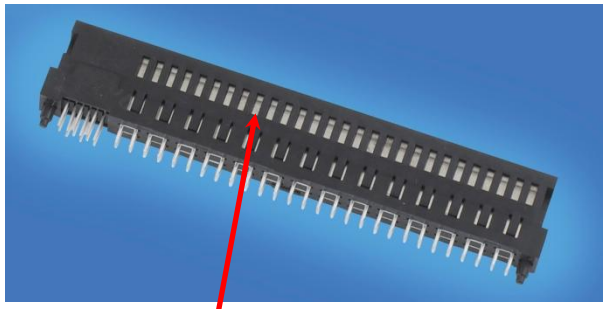


FCI Power Innovations – Historical Perspective

- *FCI is considered a technology leader in power*
- *Power contact evolution*
  - *Transition from expensive screw-machine, batch plated contacts to low cost stamped-and-formed contacts*
- *Modular tooling design (better flexibility)*
- *Contact designs w/ reduced contact resistance (lower power loss & better efficiency)*
- *Higher linear current density (better power density)*
- *Lower profile height (improved airflow)*
- *Highly vented connector housings (improved heat dissipation*







Power Solutions℠

Power Solutions Information

- Web links to product info including performance parameters, drawings, 3D models, etc
  - www.fciconnect.com/powersolutions
  - www.fciconnect.com/power

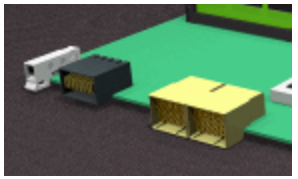
Power Supply Interface

- Power Card Edge
- HPCE™ Connectors
- PwrBlade® Connectors
- HCI® Connectors

Terminal Blocks

Host-To-Card

- Hard Metric (HM) High Power
- HCI® High Power
- PwrBlade® Connectors
- Metral® Power

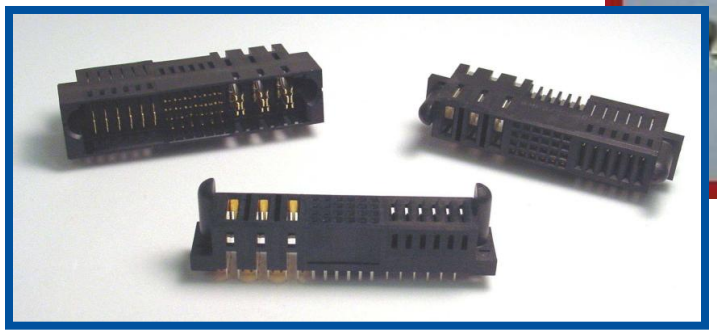


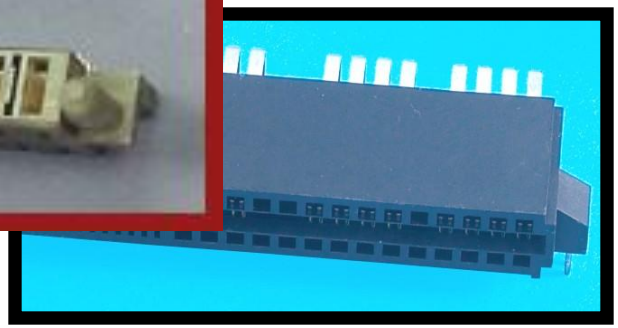
Pwr Cables/Pwr Distribution

- PwrProfile™ Cables
- PwrProfile+™ Cables
- PwrBlade® Cables
- Pwr TwinBlade® Cables
- Pwr Disty (Bus Bars)
- Power D-Sub; µTCA™

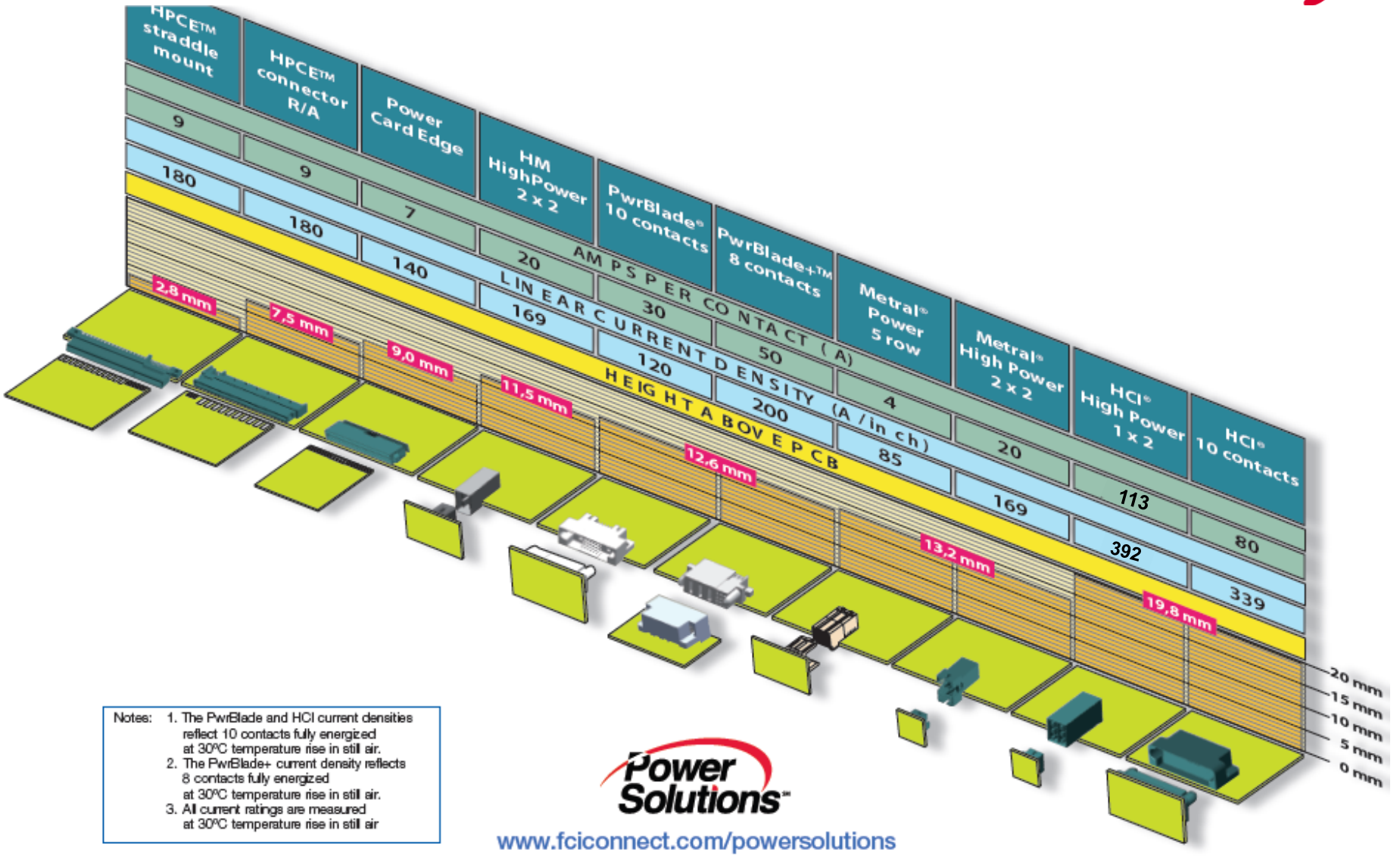
Power Solutions

Power Supply Interconnect





Power Solutions By Profile Height (Board-To-Board)



Notes:
1. The PwrBlade and HCI current densities reflect 10 contacts fully energized at 30ºC temperature rise in still air.
2. The PwrBlade+ current density reflects 8 contacts fully energized at 30ºC temperature rise in still air.
3. All current ratings are measured at 30ºC temperature rise in still air

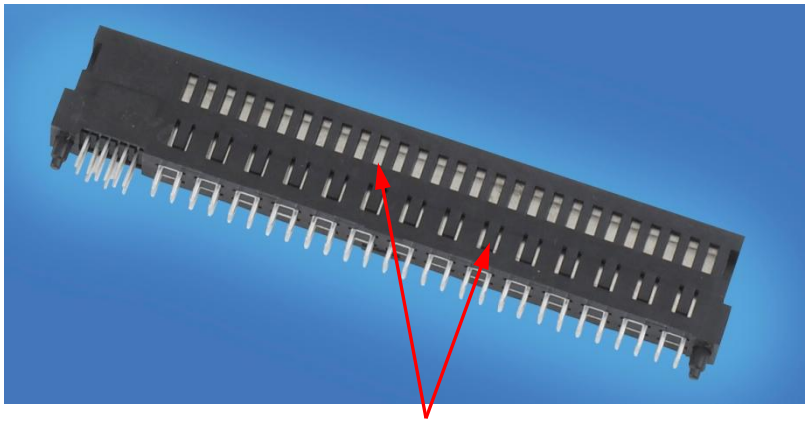
Power Solutions™

www.fciconnect.com/powersolutions

High Power Card Edge (HPCE™) Connector

- *Increased linear current density (9A/power contact beam with ≤ 30°C T-rise in still air)*
- *Offers the highest current density & lowest contact resistance*
- *Mold tooling is highly configurable*
- *Reduced product height allows for increased airflow*
- *Highly vented housing design enhances heat dissipation effects*

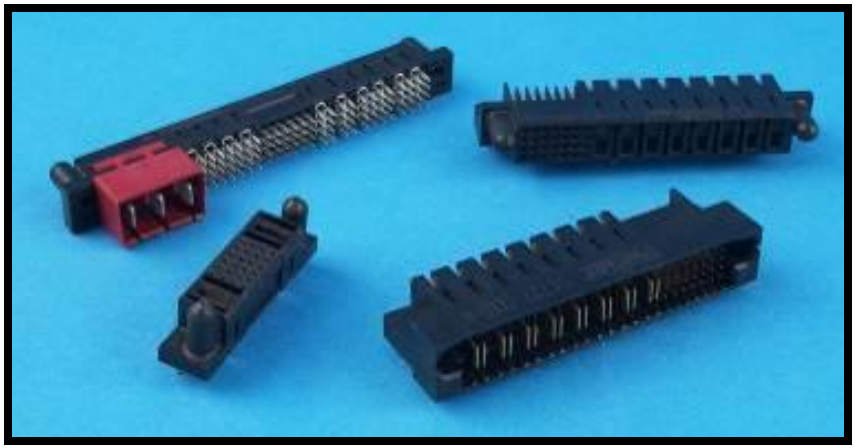
www.fciconnect.com/hpce



Vented housing design enhances heat dissipation effects

PwrBlade® Pwr Distribution System

- *Provides contacts for power distribution and power control*
- *Rugged blind-mate design*
- *48A/individual power contact; 30A/contact for 10 contacts at 30°C T-rise in still air*
- *Accommodates Cable I/O solutions as well as direct attach to Bus Bar*



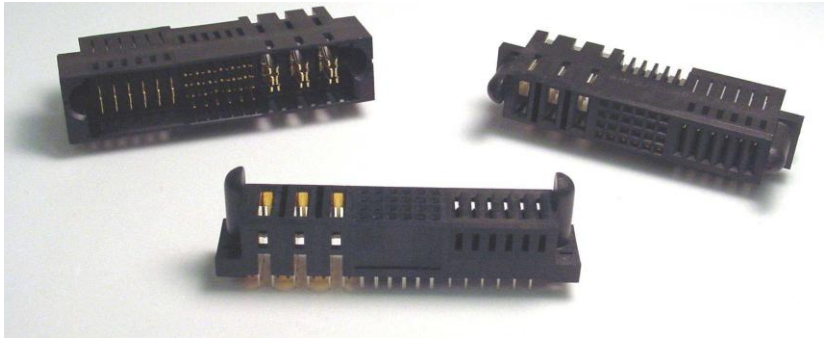
www.fciconnect.com/pwrblade

PwrBLADE® Power Distribution Connector System

Power Solutions

PwrBlade+™ – Next Gen PwrBlade® Connector

- *Similar to PwrBlade® but with enhanced power contact design for increased linear current density*
  - *Includes a 48A/contact high power option (8 contacts energized; 30ºC T-rise in still air); represents an increase versus existing PwrBlade power contacts*
  - *Also includes a 27A/contact lower power option (8 contacts energized; 30ºC T-rise in still air); for multiple voltage applications with lower power but high density requirements*
  - *Both power contact options are hot-pluggable*
- *For next generation 1U and 2U pluggable power supplies with higher current density requirements*
- *Modular tooling design with capability for many combinations of high and low power contacts as well as signal contacts for power control*
- *Licensed second-source agreement is already in place*
- *R/A header, R/A receptacle and vertical receptacle samples from production tooling are available; vertical header samples are expected in Q2 2012*



New Product

HCI® – Power Distribution Connector System

- *Market Drivers*
  - *Higher Wattage Power Supplies*
    - *Example: 1200W power supply moving to 2500W power supply*
      - ***Same power supply geometry with twice the capability***
      - ***Higher wattage drives the need for higher current density***
  - *Smaller Power Supplies*
    - *OEMs desire smaller form factors*
      - ***Denser packaging equates to higher current density (Amps/Inch)***

- *135A/individual power contact; 80A/contact for 10 contacts at 30℃ T-rise in still air*
- *Provides contacts for power distribution and power control*

New Product

www.fciconnect.com/hci

HCI® High Power – Next Gen Stackable Power

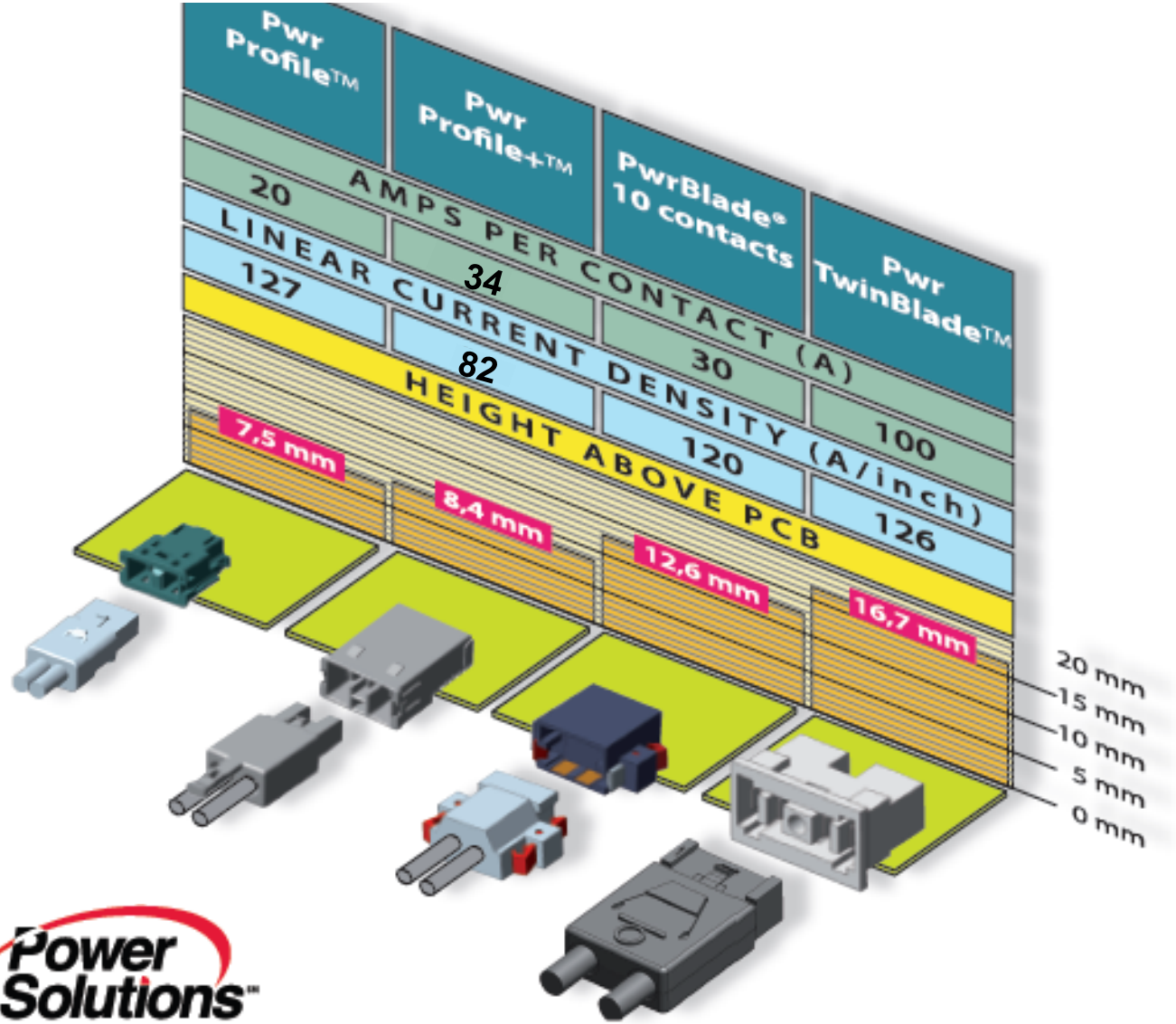
- *Similar to Hard Metric High Power connectors but incorporates the HCI power contact design*
  - *Current rating up to 113A/contact with ≤ 30°C T-rise in still air*
  - *Can be used in combination with any Hard Metric-compatible signal product (AirMax®, ZipLine® & Millipacs®)*
- *For next generation, high density host-to-card power requirements*

New Product

www.fciconnect.com/hcihighpower

Power Cable Assemblies

Power Solutions By Profile Height (Cable-To-Board)



Power Solutions™

www.fciconnect.com/powersolutions

Pwr Profile™ & Pwr Profile+™ – Next Gen Cable-To-Board

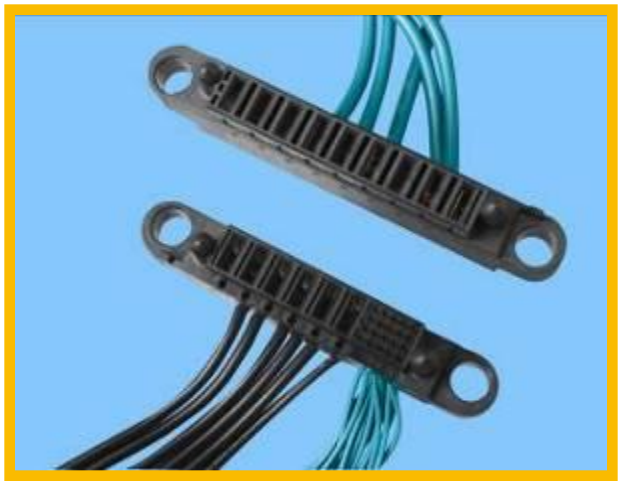
- *Low profile heights & reduced widths*
- *20A – 34A per contact (two power contacts) w/o exceeding a 30°C temperature rise (no airflow)*
- *Integrated latching system minimizes footprint*
- *Fills strategic low profile power cable-to-board connector requirements*

New Products

Pwr Profile™ Cable-To-Board

Pwr Profile+™ Cable-To-Board

PwrBlade® Header & Receptacle Cable Assys



- For Power Supply interface or Power Distribution applications
- Modular design is highly configurable
- Current rating (at 30°C T-Rise in still air)
  - 48A for single powered contact
  - De-rated to 30A for 10 powered contacts

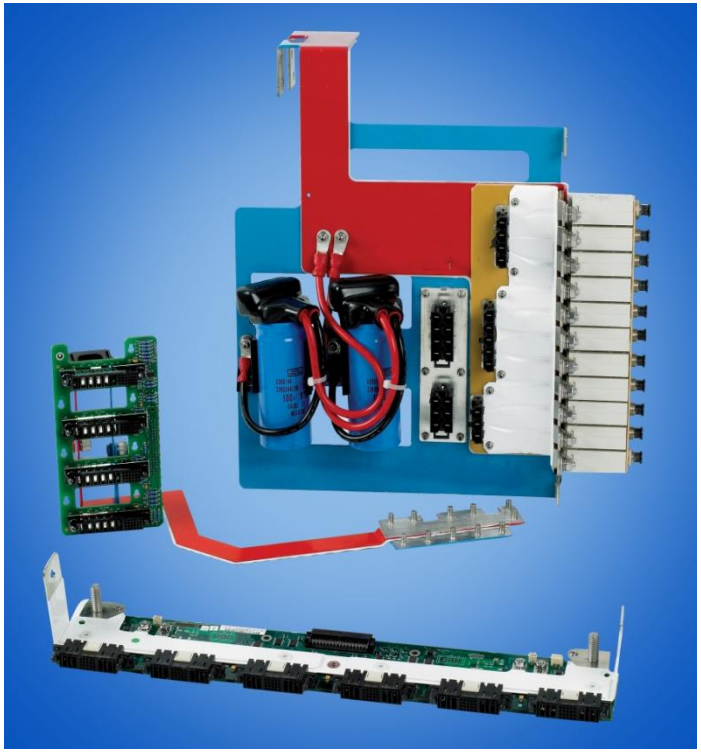
New Product

Pwr TwinBlade® Cable Assemblies

- *High power I/O for power delivery & power distribution*
  - *100A per conductor (30°C T-rise; no airflow); two conductors*
- *Right-angle & straight cable exit options for cable routing flexibility*
- *Space-saving, robust squeeze-to-release active latching system*
- *Polarized design ensures proper mating*
- *Four coding options available*
- *Right-angle, board-mount header enables front I/O applications*

Power Distribution Solutions (Bus Bars)

- *Customized designs integrate laminated bus bars, connectors and other components such as PCBs, breakers, switches, capacitors and cables*
- *Clean power distribution enabled by high capacitance and low inductance*
- *High voltage distribution with low resistance and low voltage drop*
- *Integration of a bus bar can replace thick copper traces and reduce board layers*



www.fciconnect.com/powerdistribution

Terminal Blocks

- robust and solid design
- modular system, 2 up to 24 positions
- end-to-end stackable & screw-lock flange option
- pitch-sizes: 3.50/3.81/5.00/5.08/6.35/7.62/9.52/10.16mm
- high performance rising-cage-clamp-contact system and spring-contact system
- signal and power (current rating: 8A up to 55A)
- standard green color (optional: black, blue & grey)
- text/number printing option (on request)
- RoHS compatible
- durability: 200 cycles.
- flammability UL94V-0
- c UL us recognized and IEC / VDE
- CE / TÜV pending (under approval)

www.fciconnect.com/powersolutions

Thank You

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