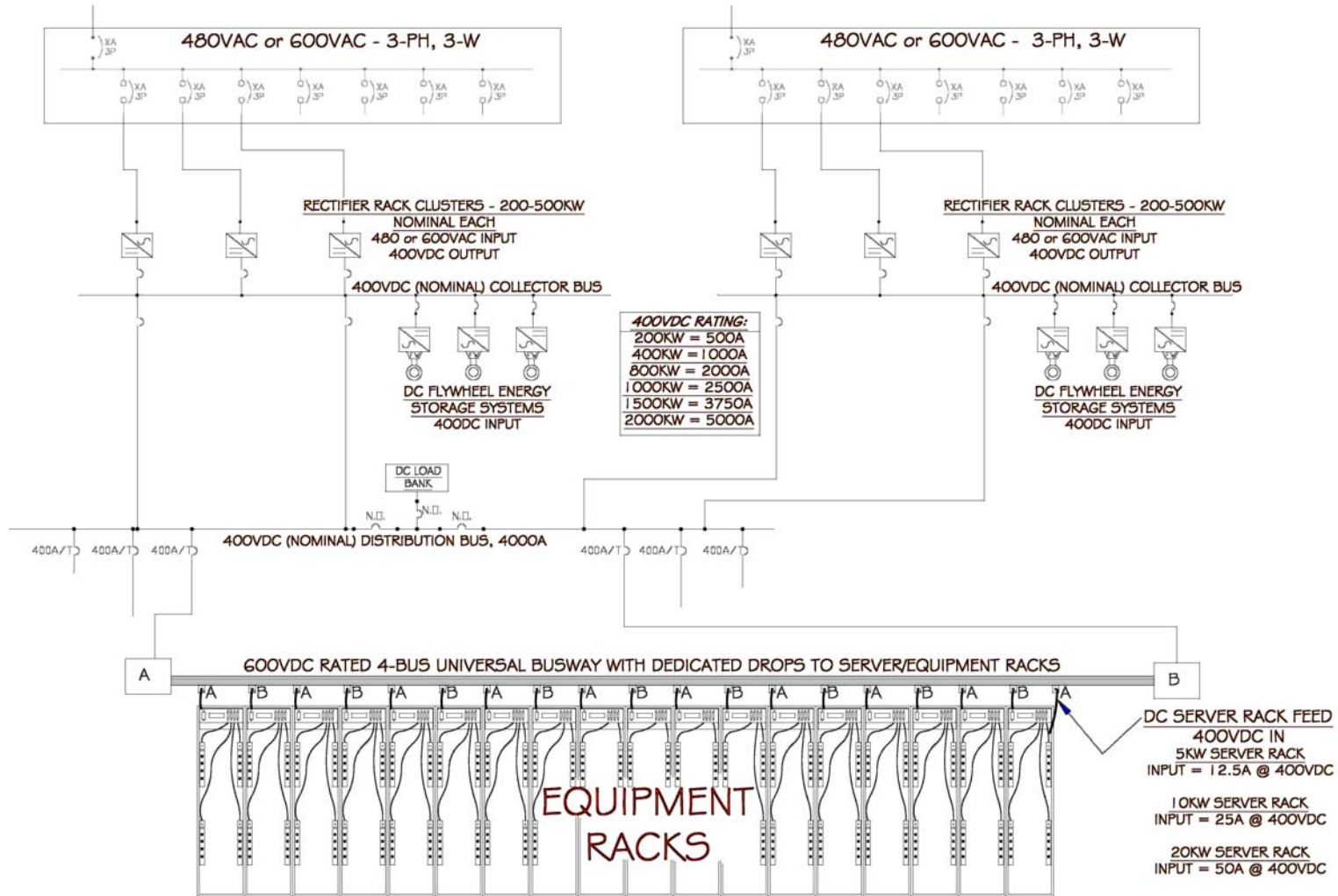


## Contacts/Connectors and Other Hardware Panel:



July 12, 2007

# 400VDC DISTRIBUTION SYSTEM



## Topics to be addressed :

- Nominal voltage rating of connectors
- Wiring configuration for cord/plugs and connectors
- Receptacle & Plug Physical Design Considerations
- Branch circuit control options



# Standards

- What standards exist today for DC connectors?
  - Swedish TC 23
  - IEC Standards
  - IEEE – NEMA – NFPA(NEC) – UL
  - Others?
- Examples from other industries?
  - TELCO
  - Transit
  - Electric Vehicles
  - Military
  - Alternative Energy (Solar – Fuel Cell – Etc..)
  - DC Link in AC UPS
- Proposed Standard = International
- Standardization Process for DC Connectors?



# Voltage Rating

- Nominal voltage rating of connectors
  - 600vDC
  - 500vDC
  - 400vDC
  - ????



# Wiring Configuration

- Wiring configuration for cord/plugs and connectors
  - Plus, Minus, Ground and Enable
  - Impedance Issues?
  - Cord Rating and Construction



# Receptacle & Plug Design

- Receptacle & Plug Physical Design Considerations
  - Base on existing standards for AC connectors - Or develop new configuration that is DC specific
  - Impedance Issues
  - Insertion & Withdrawal Force
  - Contact Metallurgy & Mechanics
  - Contact Resistance / Reliability
  - Contact Wear & Arc Resistance
  - Physical Retention / Locking Receptacle?



# Branch Circuit Control

- Branch circuit control options
  - Build in controls to verify system is off before plug or unplug action can occur
  - What is the real arcing hazard exposure?

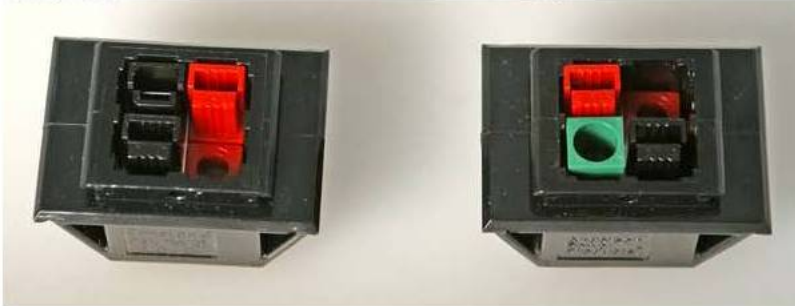




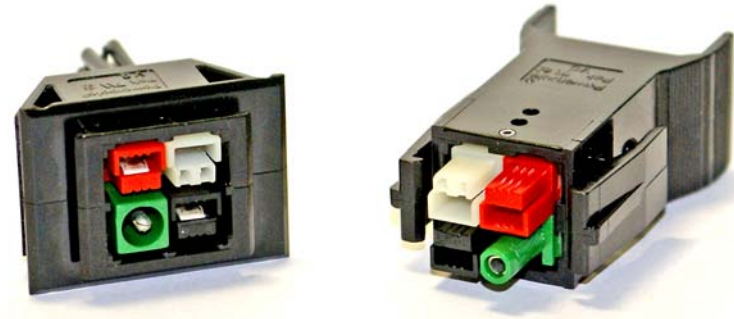
# EXAMPLES

PowerPak configurations for 400 VDC

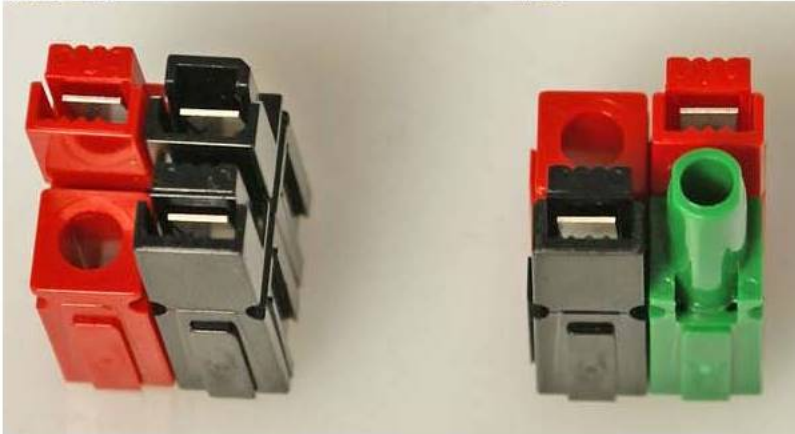
**30 amp Receptacle**  
Sun Micro



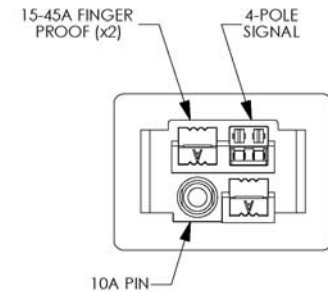
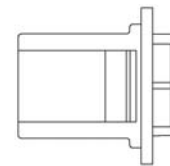
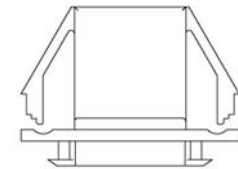
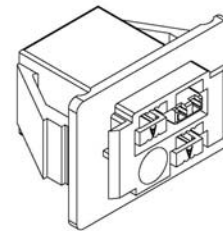
**10 Amp Receptacle**  
Intel



**30 amp Plug w/latch**  
Sun Micro



**10 Amp Plug w/latch**  
Intel



Red spacer location will be replaced by future 4 circuit signal module



# EXAMPLES

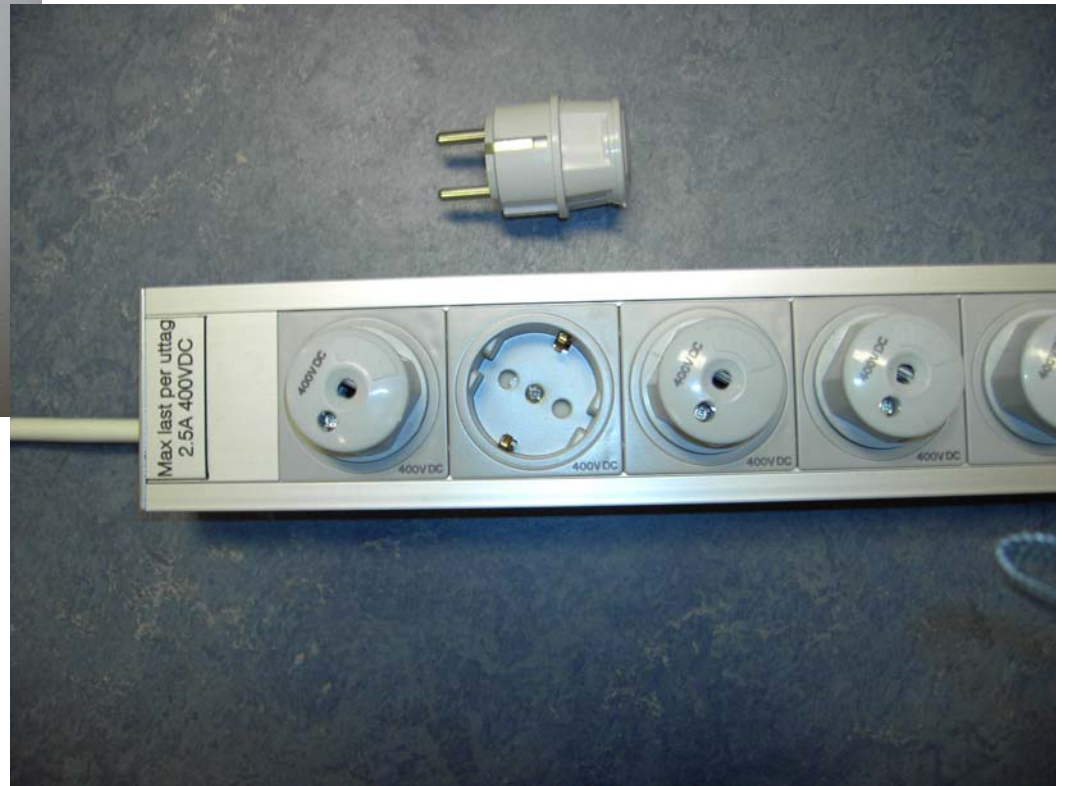


# EXAMPLES





# EXAMPLES



# EXAMPLES

