

UPAMD Goals for Power, Communications, and Connector

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Power Goals – not including those adopted at the last meeting ---

1. Positive rail and Negative rail
2. Floating connection, not grounded at adapter
 - Isolation (leakage) sufficient for medical applications?
3. Device to Device to share power if needed
 - Possibly support powering one device from another
 - Power sharing in mission and business critical situations.
4. Smart interconnect.
 - Higher power enabled through communications between devices
5. Regular non-battery and dead battery devices need starting power
 - Supply $< \sim 16V$ at $< \sim 50mA$ – non-sparking- without communications for startup
 - Higher power requires communications and software control
 - Floating electrical connection, electrically isolated – Safety
 - No shock or spark hazard under any conditions

Communications Goals – not including those adopted at the last meeting ---

1. Use existing standards if possible.
 - CAN bus, RS422/RS485, PCM others?
2. Differential signal communications
 - AC coupled on positive and negative power leads
 - Robust system –EMI, EMC, ESD
3. Other communications schema?
4. Possible symmetrical operation
 - Allow device to source other devices
 - Allow power sharing to keep critical devices working in emergencies
 - adaptive UPS
 - Software controlled
5. No communications = how much power?
 - Device startup for regular non-battery powered devices
6. Provide nominal 12-14V at $< 50mA$ until communications established
 - Device startup for low battery or non-battery systems
7. Must assume device protects itself at low end of battery to retain restart capability.
8. Restarting safety circuits is very battery and safety circuit specific. Battery failures require new battery/external charge
 - No shock hazard, power source protects self
9. Communications messages needed (starting thoughts --extend for symmetrical operation)
 - Identification of source and load.
 - Statement of available power
 - Status of Source
 - Status of Load
 - Termination normal and abnormal

10. LED indicators and controls for cables.
11. Reliable communications – CRC, checksum etc.
12. Adapter categories.

Connector Goals – not including those adopted at the last meeting ---

1. Capable of full >10W to 130W
2. Easy disconnect AND cable retention capability in same common connector design
 - Easy disconnect to prevent tripping in office/home environment
 - health and safety issue
 - Retention mechanism -Magnetic or Mechanical
 - Optional Strong retention capability for rugged high acceleration environments - car/boat/airplane/mission-critical
3. Very high connect –disconnect life cycle capability –Many year usage
4. Support lower profile devices
 - 10mm or less? (iPad=13.4mm to start with) 5mm or less goal
 - other shapes and possibly flat surface connect
5. Watertight or Water resistant
 - To keep coffee, tea, rain, adult beverages, out of the connection.
 - Seal on cable side of connection for easy replacement of cable or seal.
6. Positive and Negative connection with communication AC coupled?
 - Assume redundant contacts for reliability and current sharing?
7. Aesthetically pleasing
8. Retention mechanism -Magnetic or Mechanical
 - Magnetic possibly good choice but under patent,
 - Several clip possibilities exist. New Ideas clearly welcome
9. Blind mate friendly -it possible
 - think of mating adapters and device alignment by feel in the dark
 - Easy docking station or charging station operation
10. Separate Power Cable capability
 - Same connector on each end –adapter and device
 - Buy cable to meet length need
 - Reduce adapter cost –consumer buys UPAMD cable(s) to meet needs
 - Possible quick interface to join two cables
 - One adapter could support multiple cables/devices
11. User replaceable power cable
 - Most damage is to connectors and cables, replace as needed
 - Change cable to adjust length needs
 - Carry/borrow backup cable
12. Arcing problem.