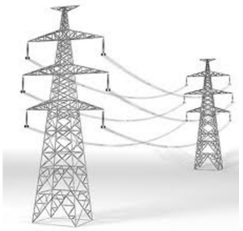
Test Equipment, Power Supplies, and Noise

Common Mode Noise:

Current flowing from primary to secondary via parasitic capacitance in the transformer, then through system ground causes common mode noise that if not properly filtered can cause interfere with the system resolution.

Differential Mode Noise:

This is typically referred to as "Ripple and Noise" and is measured in pk-pk voltage that would be seen across the DC output of the power supply.

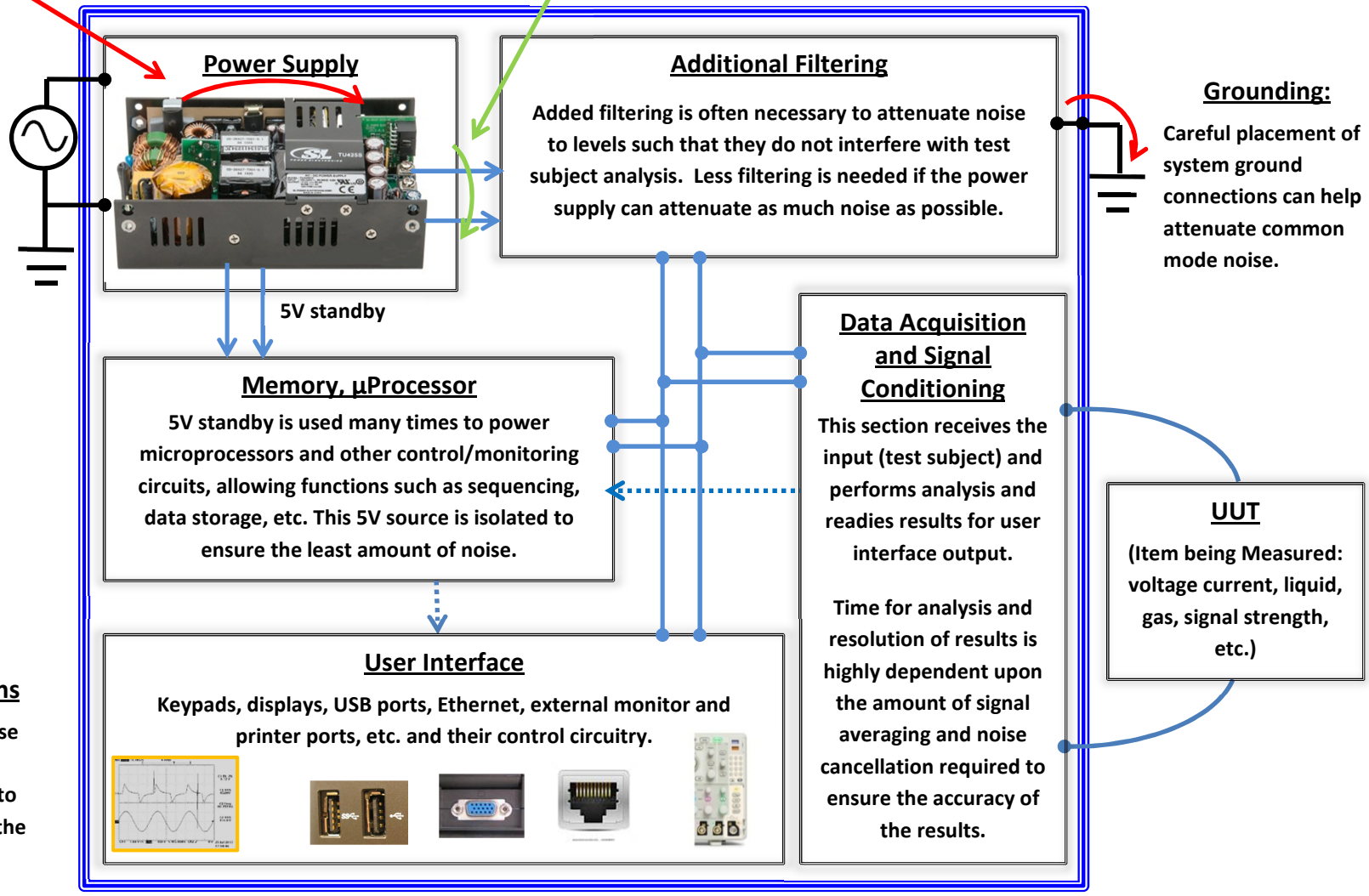


AC Source and External Influences

The AC source, usually from building service and local power grid, can introduce many phenomena that can cause system disruption and/or affect performance. Line surges, sags, brownouts, etc., will potentially cause a system shutdown, unless these phenomena can be managed. A power supply that can "protect" the system from these phenomena will ensure continued operation of the equipment.

Radiated and Conducted Emissions

Other noise issues can be caused by noise radiating from the power supply or conducted along the DC power lines onto system circuits and, conversely, back to the AC source. A power supply that can minimize these can ensure system compliance with emissions standards. As a plus, less effort is required from the system designer during development.



Grounding:

Careful placement of system ground connections can help attenuate common mode noise.

Black Lines = AC Power

Red Line = Common Mode Current

Blue Solid Lines = DC Power

Blue Dotted Lines = Signals

Green Line = Diff. Mode Noise