

OPTO-DX 'Dirty' & 'Clean' Side Power Isolation - Recommended Configurations and Pitfalls

AudioWise Inc. - November 2019

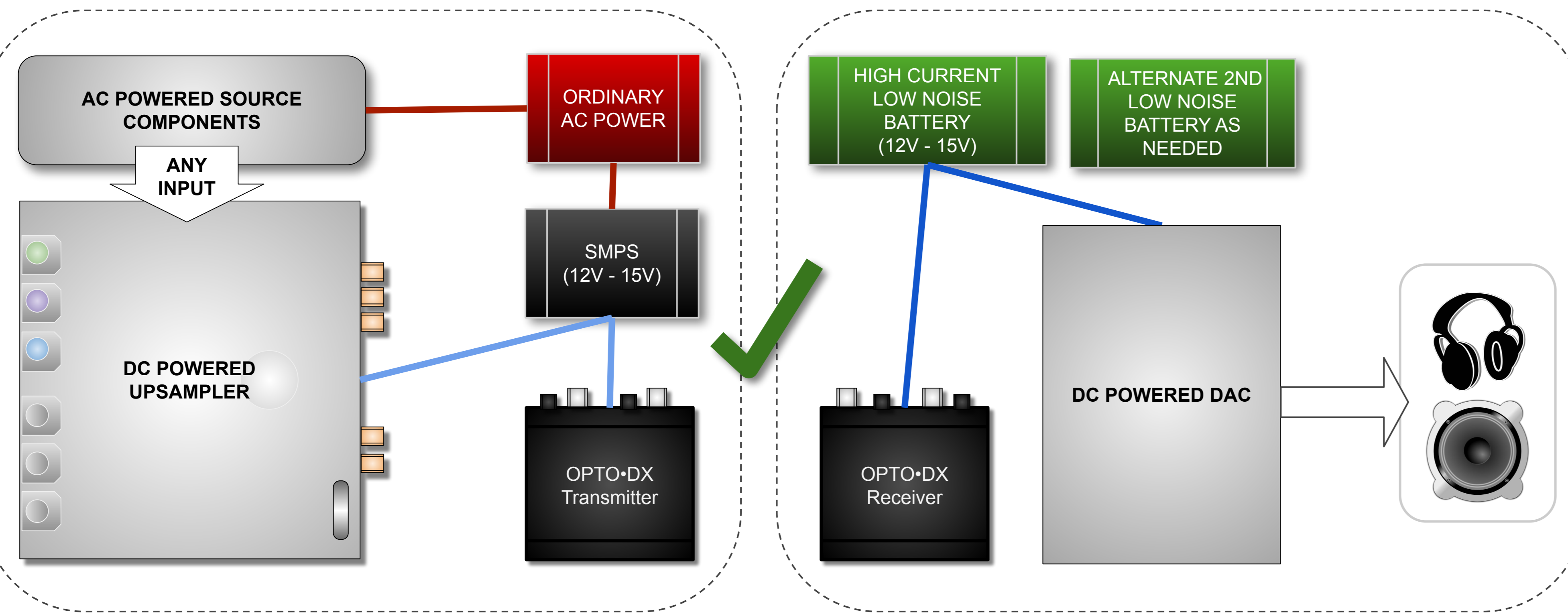
1

Battery isolation on 'Clean' (DAC) side with low noise power preferred for better D/A. Premium DC cables preferred.

'Dirty' (Digital Component) side does not 'require' clean power nor premium DC cables for performant operation but less RF noise is preferred.

Any signal input from source to upsampler is okay.

Downstream of DAC direct to headphones or loudspeakers with no AC powered amplification.

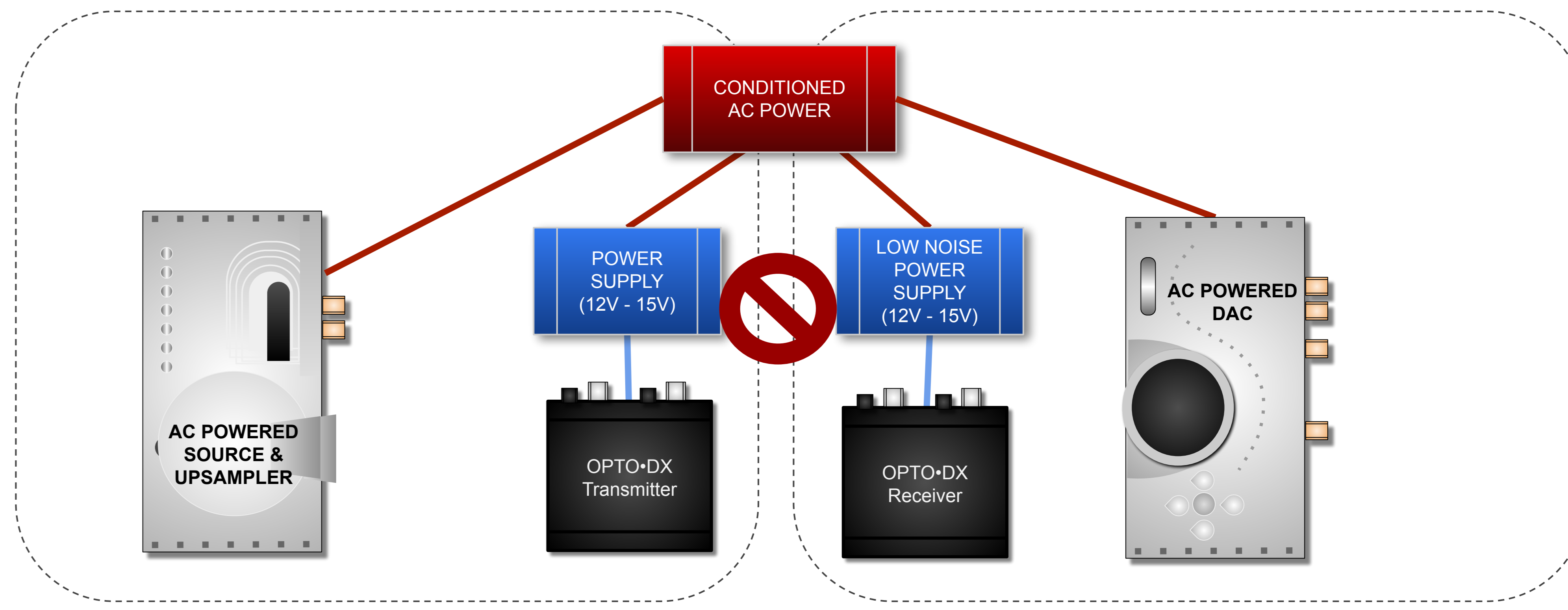


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Dirty and Clean sides are galvanically connected via AC power cabling.

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Even across PSU's with separate power rails, RF noise is transmitted

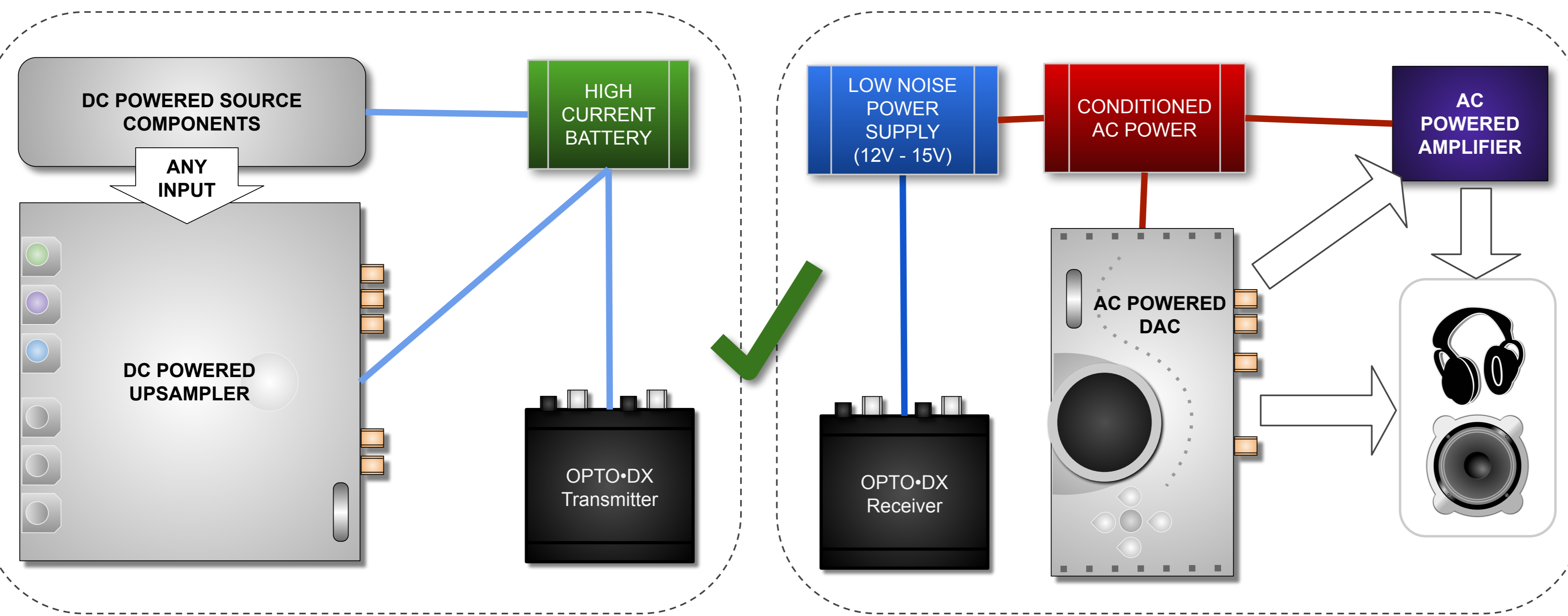


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Battery isolation on 'Dirty' (Digital Component) side. Low noise battery not required. Premium DC power cabling not required.

'Clean' (DAC) side requires clean power. Premium DC & AC power cables.

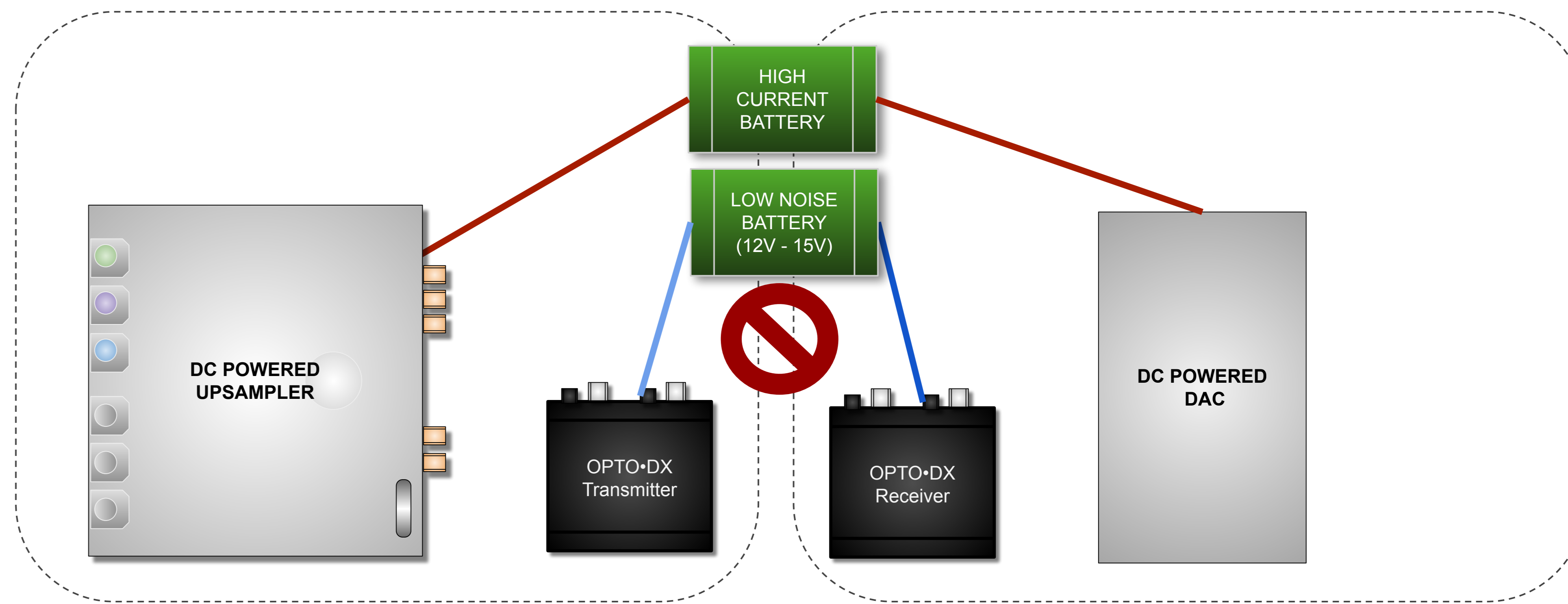
Downstream of DAC to headphones or loudspeakers with optional AC powered amplification.



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Dirty and Clean sides are galvanically connected via DC power cabling.

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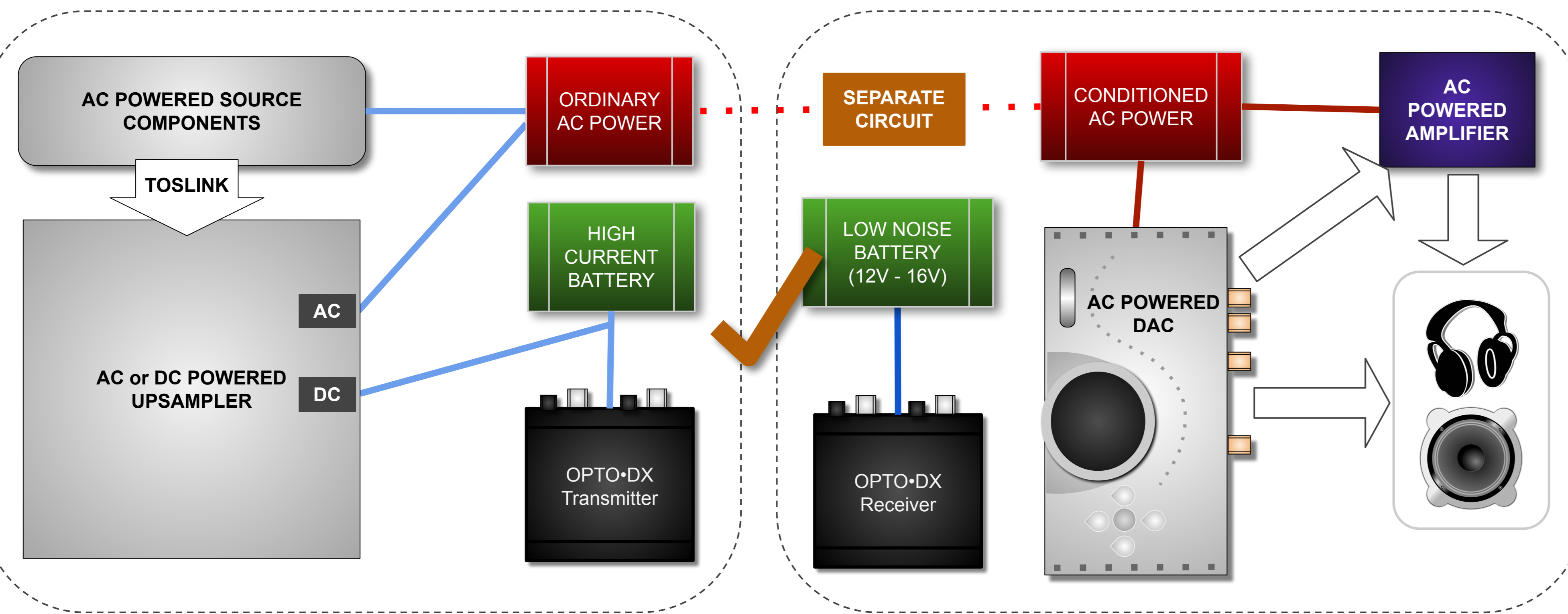


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AC power on separate circuits not as ideal as batteries. Isolation on 'Dirty' (Digital Component) side using AC or DC power. Low noise battery not required. Premium DC power cabling not required.

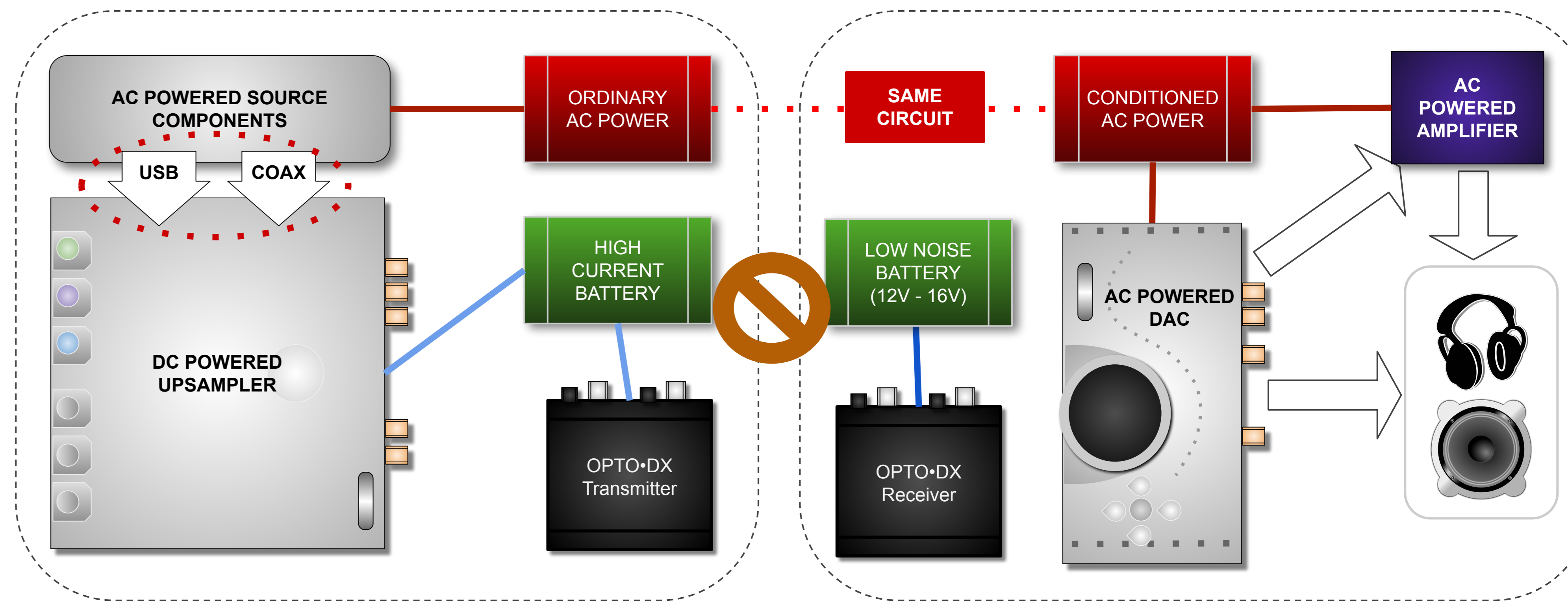
Source requires Toslink output for galvanic isolation

'Clean' (DAC) side has battery isolated OptoDX-R with AC clean power on a separate circuit to DAC and optional Amp. Premium DC & AC power cables.



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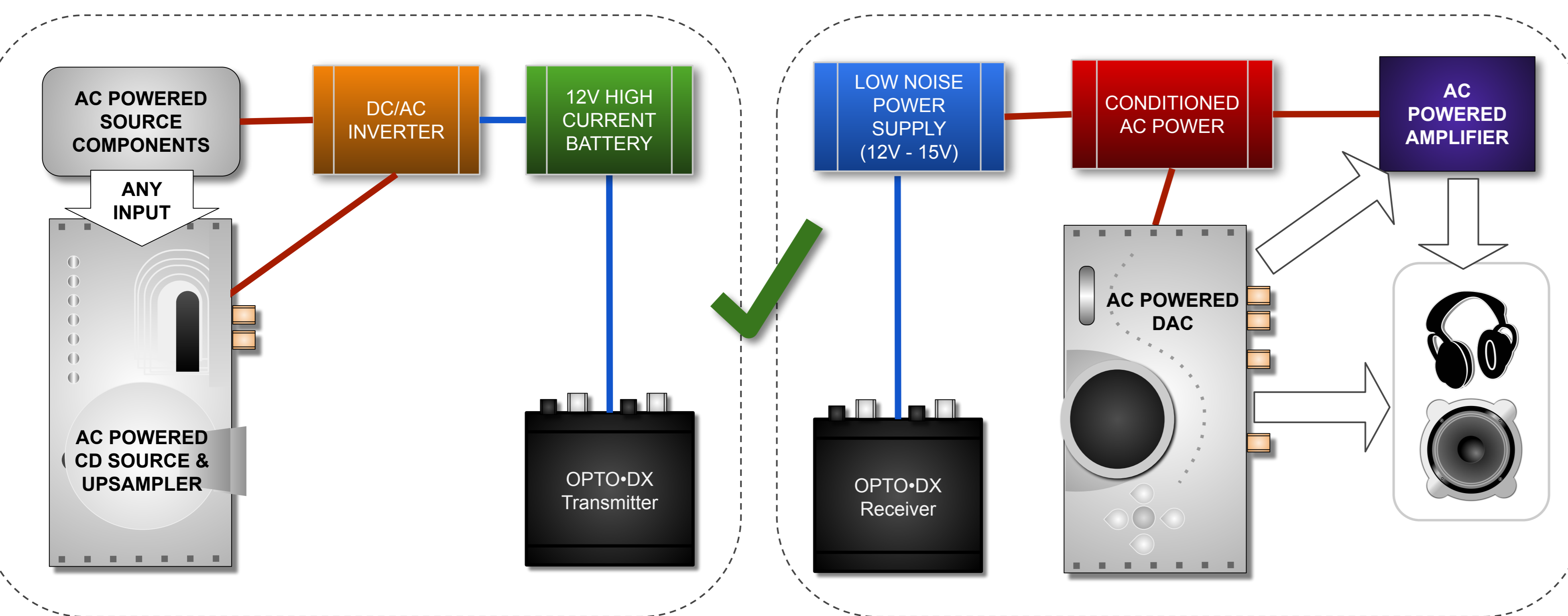
Upsampler and OPTO-DX's are battery powered but an AC powered source component is galvanically connected to the upsampler via USB or Coax and transfers RF via power to the AC Powered DAC on the same circuit.



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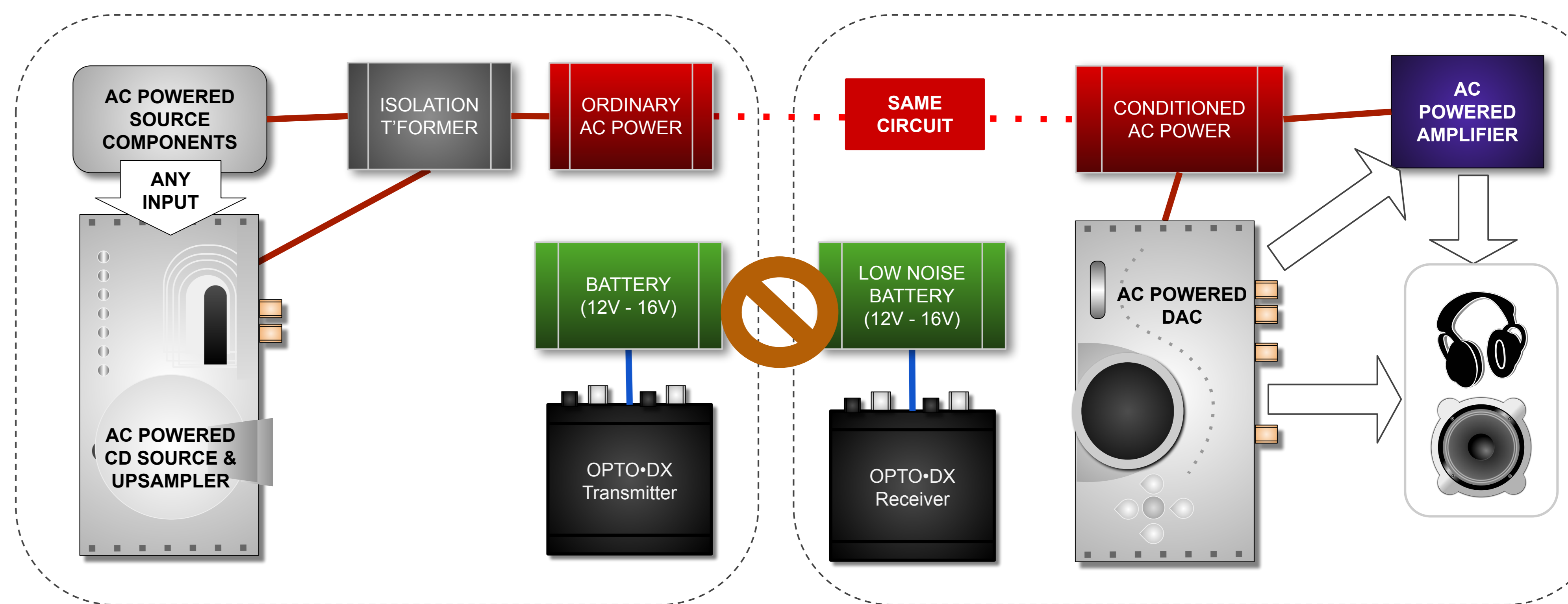
Conditioned AC power on Clean (DAC) side combined with battery powered OPTO-DX receiver. Clean power is preferred at the DAC for better D/A.

'Dirty' (Digital) side is battery isolated and does not 'require' clean power for performant operation but less RF noise is preferred.



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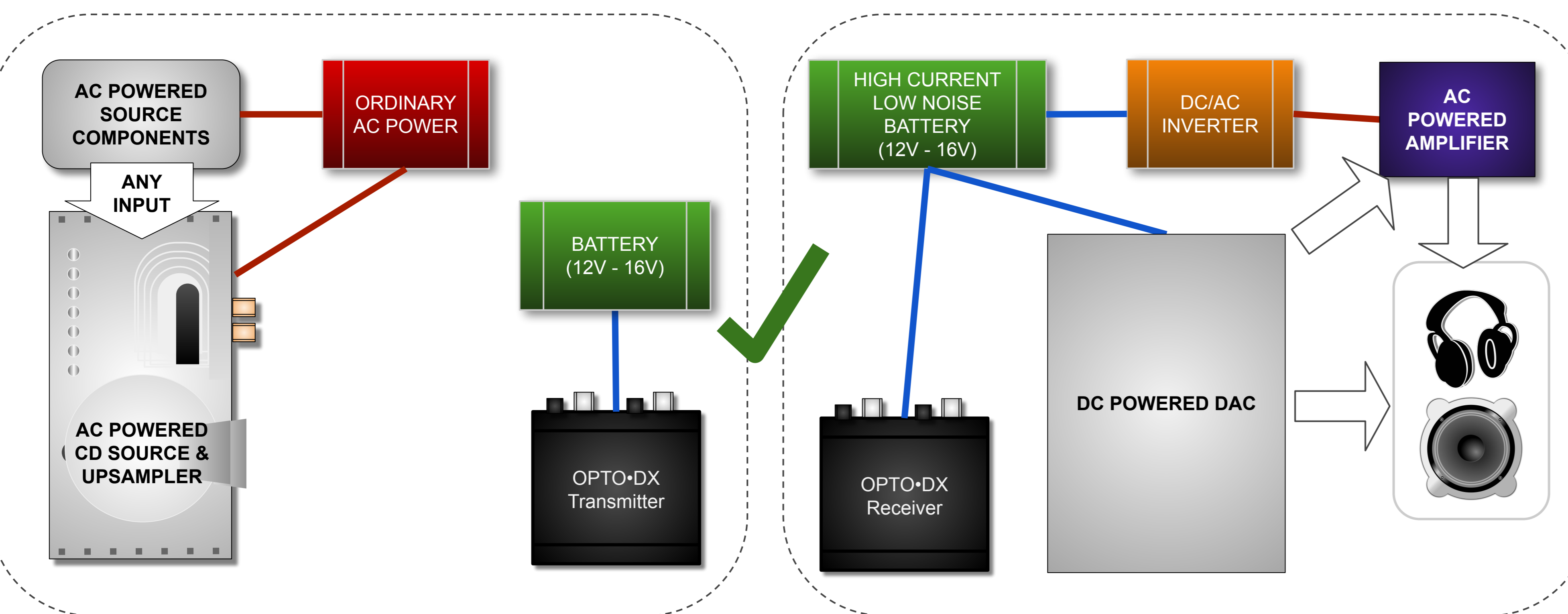
Regardless of isolation transformers, a degree of RF noise is transmitted from Dirty to Clean side via AC power.



5

Battery isolation on 'Clean' (DAC) side with low noise power preferred for better D/A. Amplifier needs to be powered from inverter.

'Dirty' (Digital) side AC Power is isolated from Clean side. Power conditioning on Dirty Side AC not required but less RF noise is preferred.



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Even though a DAC is power isolated, RF noise can conduct through the inputs of a non-isolated amplifier back to the DAC via the signal outputs.

