Re: 85−265VAC and 24VDC combined power supply

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> I am currently working on a device where I am evaluating options for the design of the power supply. On the secondary side we need two power supply output with 5V/4A and 13,8V/2A (uncommon voltage). The input voltages are the standard 85V−265VAC range and 24VDC.
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> We want every unit to be capable of being used in both environments. Therefore the power supply should allow both inputs. Because of 24VDC input I will need two DC/DC converters at the output side. One from 24VDC/5VDC and one from 24VDC/13,8VDC. These converters are easy to design and can have a high efficiency (>90−95%).
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> What I am unsure about is how to handle the transformation from the primary 85V−265V to the intermediate internal voltage of 24V. A regulated switched mode power supply is certainly a overkill because I don't need the 24V to be regulated. So I thought I could use a standard 50/60Hz input stage with a simple full bridge rectifier and a good transformer. Size is not the problem but power efficiency and costs are. Or are there any better options? I searched for quite some time in goggle for possible AC input stages but did not come up with a good solution.

Sounds like it may just require a single isolated flyback with dual outputs. The flyback primary is powered by both the rectified line AC and the 24VDC input. The primary coil will be tapped with separate feeds for the two DC inputs. You can use a standard IEC AC receptacle with integral DPST switch that opens the 24VDC feed when a plug is inserted. It will be important to open the GND connection of the 24VDC input when the AC is applied to prevent shorting the rectifier.

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