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(54) **START-UP PROTECTION USING INRUSH CURRENT CONTROL**

(52) **U.S. Cl.**  
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(57) **ABSTRACT**

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An inrush control apparatus (ICA) having power limiting circuitry controls inrush current demand at load startup. The ICA controller continuously evaluates load power consumption based on characteristics of loads electrically connected, via the ICA, to an alternating current (AC) source. In response to detecting an inrush current condition, the controller initiates one or more soft-start procedures that includes triggering a thyristor to provide duty-cycled power, using duty cycled parameters associated with characteristics of a particular load. The controller connects the triggered thyristor to the particular load and disconnects the AC source power from the particular load. The thyristor provides duty-cycled power supplying a specified power level to the particular load, corresponding to steady state operation of the particular load. In response to attaining steady state operation of the particular load, the controller completes the soft-start procedure by connecting the AC source power to the particular load and disengaging the thyristor.

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**Related U.S. Application Data**

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