US 20220360160A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2022/0360160 A1**

JEONG et al. (43) **Pub. Date: Nov. 10, 2022**

(54) **SENSORLESS PREDICTION METHOD OF OVERCURRENT IN ISOLATED BIDIRECTIONAL DC-DC CONVERTER**

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(21) Appl. No.: **17/623,408**

(22) PCT Filed: **Dec. 30, 2020**

(86) PCT No.: **PCT/KR2020/019407**

§ 371 (c)(1),
(2) Date: **Dec. 28, 2021**

(30) **Foreign Application Priority Data**

Jan. 9, 2020 (KR) 10-2020-0003398

Publication Classification

(51) **Int. Cl.**

H02M 1/00	(2006.01)
H02M 1/32	(2006.01)
H02M 3/335	(2006.01)

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

CPC ***H02M 1/0009*** (2021.05); ***H02M 1/32*** (2013.01); ***H02M 3/33573*** (2021.05); ***H02M 3/33584*** (2013.01)

(57) **ABSTRACT**

Proposed is a method for accurately predicting an overcurrent flowing inside an isolated bidirectional DC-DC converter even without using a current sensor on primary and secondary sides of a transformer. In the converter according to the present disclosure, an average value of the inductor current is calculated after deriving inflection point current values by respectively modeling a current waveform for an inductor current of the transformer. A secondary side output current average value is calculated by comparing the calculated average value of the inductor current with a secondary side capacitor current average value of the converter at no load. Next, an error between the secondary side output current average value and an actually measured secondary side output current is calculated, and the inflection point current values of the current waveform are updated using a gain for reducing the error through PI control, whereby the overcurrent may be predicted.