US 20220360056A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2022/0360056 A1**

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

(54) **PARALLEL TRANSFORMER TEMPERATURE MEASUREMENT AND FAULT DETECTION SYSTEM AND METHOD FOR DDC ENCLOSURES**

(71) Applicant: **Carrier Corporation**, Palm Beach Gardens, FL (US)

(72) Inventors: **Arun Dev Kanagaraj**, Hyderabad (IN); **Alex Raj Arulanandan**, Hyderabad (IN)

(21) Appl. No.: **17/738,505**

(22) Filed: **May 6, 2022**

(30) **Foreign Application Priority Data**

May 7, 2021 (IN) 202111020866

Publication Classification

(51) **Int. Cl.**
H02B 1/56 (2006.01)
G01K 3/14 (2006.01)

(52) **U.S. Cl.**
CPC ***H02B 1/565*** (2013.01); ***G01K 3/14*** (2013.01)

(57) **ABSTRACT**

A system, for measurement of temperatures and detection of faults of parallel transformers in a DDC enclosure, that includes a first transformer and a second transformer arranged in a parallel configuration that deliver power to components of a building management system (BMS). The system also includes a direct digital control (DDC) circuit that controls power delivered through the first and the second transformers to the components of the building management system (BMS). The system further includes a first temperature sensor, operationally connected to the DDC circuit, which measures the temperature of the first transformer. Furthermore, the system includes a second temperature sensor, operationally connected to the DDC circuit, which measures the temperature of the second transformer. The DDC circuit determines a difference between the first temperature and the second temperature to predict a fault in the first transformer or the second transformer.