



US 20240222991A1

(19) **United States**(12) **Patent Application Publication**  
**SOHN et al.**(10) **Pub. No.: US 2024/0222991 A1**(43) **Pub. Date: Jul. 4, 2024**(54) **BATTERY MANAGEMENT DEVICE AND  
MOBILE ROBOT COMPRISING SAME**(52) **U.S. Cl.**CPC ..... *H02J 7/0068* (2013.01); *A47L 9/2884*  
(2013.01); *G01R 19/003* (2013.01); *G01R*  
*19/16542* (2013.01); *H02J 7/0047* (2013.01);  
*H02J 7/34* (2013.01)(71) Applicant: **LG ELECTRONICS INC.**, Seoul  
(KR)(72) Inventors: **Byungkon SOHN**, Seoul (KR);  
**Sangkyu YI**, Seoul (KR)

(57)

**ABSTRACT**(21) Appl. No.: **18/293,433**(22) PCT Filed: **Jul. 28, 2022**(86) PCT No.: **PCT/KR2022/011098**

§ 371 (c)(1),

(2) Date: **Jan. 30, 2024**(30) **Foreign Application Priority Data**

Aug. 3, 2021 (KR) ..... 10-2021-0102063

**Publication Classification**(51) **Int. Cl.***H02J 7/00* (2006.01)  
*A47L 9/28* (2006.01)  
*G01R 19/00* (2006.01)  
*G01R 19/165* (2006.01)  
*H02J 7/34* (2006.01)

The present disclosure includes: a power supply unit which generates an operating power supply voltage from a plurality of batteries; a power connection switching unit which performs connection or disconnection of the power supply unit to or from each of the batteries; a plurality of voltage detection units which detect output voltages output from the respective batteries; a detection connection switching unit which performs connection or disconnection of each of the batteries to or from each of the voltage detection units; and a battery controller which controls the power connection switching unit and the detection connection switching unit based on information input from the voltage detection units, wherein the battery controller selects, as a main battery, one of the plurality of batteries based on the output voltages, selects remaining batteries as an auxiliary battery, and connects the auxiliary battery to the voltage detection units for a first time period, and periodically repeats disconnection for a second time period, wherein the first time period is shorter than the second time period.

