

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
12 June 2025 (12.06.2025)



(10) International Publication Number
WO 2025/122292 A1

(51) International Patent Classification:

H02J 3/08 (2006.01) *H02M* 7/219 (2006.01)
H02J 3/38 (2006.01) *H02M* 1/10 (2006.01)
H02J 3/00 (2006.01)

(21) International Application Number:

PCT/US2024/055138

(22) International Filing Date:

08 November 2024 (08.11.2024)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/606,872 06 December 2023 (06.12.2023) US
18/940,267 07 November 2024 (07.11.2024) US

(63) Related by continuation (CON) or continuation-in-part (CIP) to earlier applications:

US 63/606,872 (CIP)
Filed on 06 December 2023 (06.12.2023)

US 18/940,267 (CON)

Filed on 07 November 2024 (07.11.2024)

(71) Applicant: **DG MATRIX, INC.** [US/US]; 8105 Last Oak Court, Raleigh, North Carolina 27613-1692 (US).

(72) Inventor: **INAM, Haroon**; 1157 Stone Kirk Drive, Raleigh, North Carolina 27614 (US).

(74) Agent: **BARNES, Neil**; PO Box 52546, Durham, North Carolina 27717 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH,

(54) Title: POWER SUPPLY AND DEMAND SYNCHRONIZATION SYSTEM AND METHOD FOR MODULAR MULTI-PORT SYSTEM

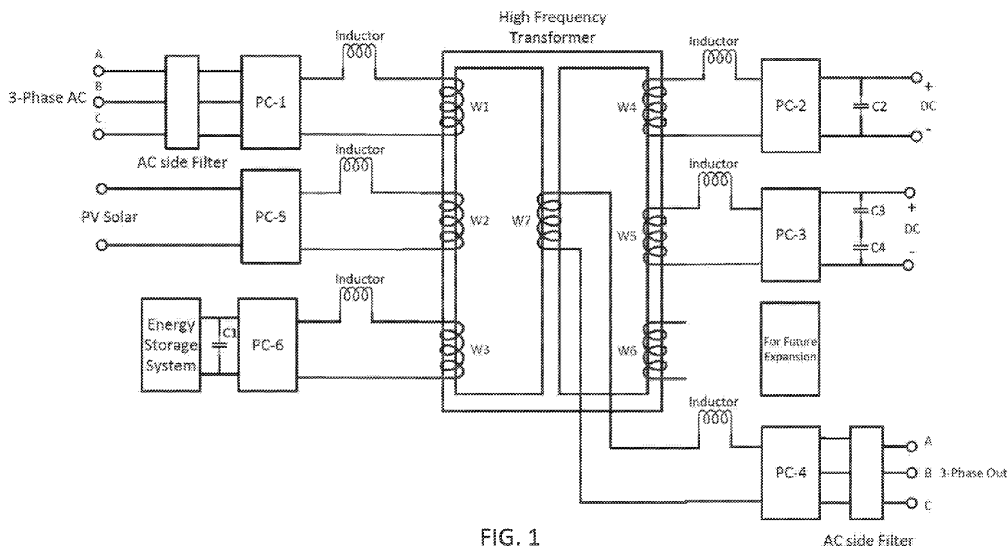


FIG. 1

(57) Abstract: A modular multiport converter system includes a plurality of distributed controllers, associated with different ports of the system that are able to synchronize to ensure that power drawn from the system is equal to power supplied to the system with precise timing. The distributed controllers are able to receive a clock signal from a leader controller, or from a vice leader controller in the event that leader controller is unable to function.

[Continued on next page]

TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS,
ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

- *with international search report (Art. 21(3))*
- *with amended claims (Art. 19(1))*