

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
5 February 2009 (05.02.2009)

PCT

(10) International Publication Number
WO 2009/017495 A1

(51) International Patent Classification:
F25B 29/00 (2006.01)

(21) International Application Number:
PCT/US2007/074727

(22) International Filing Date: 30 July 2007 (30.07.2007)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant (for all designated States except US): **ADVANTEST CORPORATION** [JP/JP]; 32-1, Asahicho 1-chome, Nerima-ku, Tokyo 179-0071 (JP).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **STUCKEY, Larry** [US/US]; 8517 Adobe Bluffs Drive, San Diego, California 92129 (US). **GOLNAS, Anastasios** [GR/US]; 655 W Irving Park Rd, Apt 5205, Chicago, Illinois 60613 (US). **ALDAZ, Robert Edward** [US/US]; 834 Thornwood Dr., Saint Charles, Illinois 60174 (US). **YU, David** [US/US]; 222 Lehigh Lane, Bloomingdale, Illinois 60108 (US).

(74) Agents: **BERNSTEIN, Bruce H.** et al.; Greenblum & Bernstein, P.L.C., 1950 Roland Clarke Place, Reston, Virginia 20191 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

(54) Title: THERMAL CONTROLLER FOR ELECTRONIC DEVICES

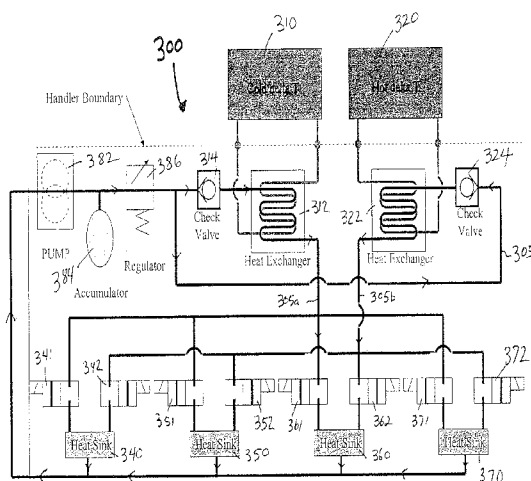


FIGURE: 3

(57) Abstract: An apparatus controls a temperature of a device (406) by circulating a fluid through a heat sink (415) in thermal contact with the device (406). The apparatus includes an adjustable cold input (410), which inputs a cold portion of the fluid having a first temperature, and an adjustable hot input (420), which inputs a hot portion of the fluid having a second temperature higher than the first temperature. The apparatus further includes a chamber (417), connected to the cold input (410) and hot input (420), in which the cold and hot portions of the fluid mix in a combined fluid portion that impinges on the heat sink (415). The combined fluid portion has a combined temperature that directly affects a temperature of the heat sink (415). The cold input (410) and hot input (420) are adjusted to dynamically control the combined temperature, enabling the heat sink temperature to compensate for changes in the device (406) temperature, substantially maintaining a set point temperature of the device (406).