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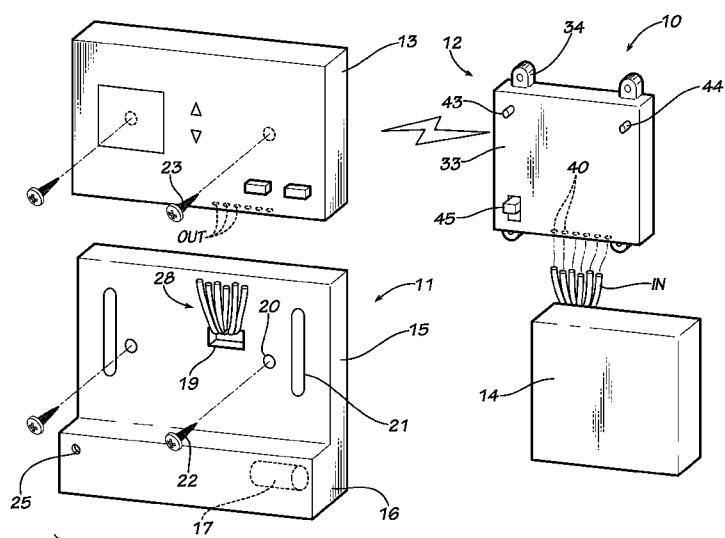
AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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(54) **Title:** WIRELESS THERMOSTAT ADAPTER SYSTEM**FIG. 1**

(57) **Abstract:** A wireless thermostat adapter system (10) includes a thermostat interface (11) and an HVAC interface (12). A two-way wireless communication is effected between the thermostat interface and the HVAC interface through a conventional RF signal. The thermostat interface also includes an electrical circuit (26) with an antenna (27), a set of six flexible thermostat coupling wires (28) which are coupled to the thermostat, and a short range RF transceiver (29). The HVAC interface includes an electrical circuit 38 which is adapted to be coupled to a HVAC systems (14). The HVAC interface circuit includes an antenna (39) and a set of six HVAC wire terminals (40) which coupled the HVAC interface with the HVAC. The HVAC interface also includes a short range RF transceiver (41) coupled to the antenna (39).



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/022907**A. CLASSIFICATION OF SUBJECT MATTER*****F24F 11/02(2006.01)i, H04L 29/10(2006.01)i***

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

F24F 11/02; F23N 5/20; G05D 11/00; F16K 31/48; F25B 1/00; G05D 23/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: thermostat, interface, circuit, wireless

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2006-0042283 A1 (HWANG et al.) 02 March 2006 See paras. 36, 37, fig. 4	1-14
A	US 7558650 B2 (THORNTON DEAN C. et al.) 07 July 2009 See col.5 line 64 - col.6 line 32, figs. 1, 4, 12	1-14
A	US 2010-0300549 A1 (ALTIERI GREIG E. et al.) 02 December 2010 See paras.45-49, figs. 3, 4	1-14
A	US 04191328A A (ISAACS; ROGER H. et al.) 04 March 1980 See col.3 line 14-24, cl. 1, fig. 1	1-14



Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2006-0042283 A1	02.03.2006	CN 1740689 A	01.03.2006
		CN 1740689 C0	01.03.2006
		EP 1630483 A2	01.03.2006
		EP 1630483 A3	01.08.2007
		KR 10-2006-0018677 A	02.03.2006
		KR20060018677A	02.03.2006
US 7558650 B2	07.07.2009	EP 1913453 A2	23.04.2008
		US 2007-0106426 A1	10.05.2007
		US 2007-0179674 A1	02.08.2007
		US 2009-0222141 A1	03.09.2009
		US 2009-076659 A1	19.03.2009
		US 2011-288690 A1	24.11.2011
		US 8010238 B2	30.08.2011
		US 8185248 B2	22.05.2012
		WO 2007-011999 A2	25.01.2007
		WO 2007-011999 A3	25.01.2007
		WO 2007-011999 A3	23.04.2009
		WO 2007-011999 A8	22.03.2007
US 2010-0300549 A1	02.12.2010	US 2010-0301133 A1	02.12.2010
		US 8260466 B2	04.09.2012
US 04191328A A	04.03.1980	None	