



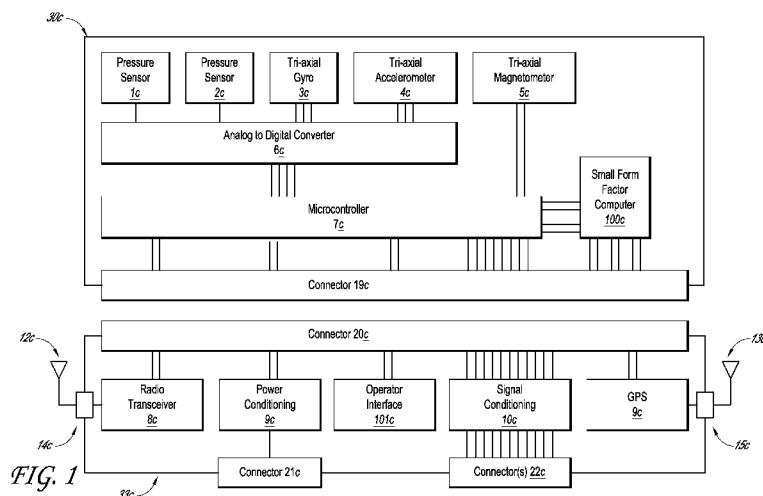
- (51) International Patent Classification:
G05D 1/10 (2006.01)
- (21) International Application Number:
PCT/US2012/051227
- (22) International Filing Date:
16 August 2012 (16.08.2012)
- (25) Filing Language:
English
- (26) Publication Language:
English
- (30) Priority Data:
61/524,319 16 August 2011 (16.08.2011) US
- (71) Applicant (for all designated States except US): **UNMANNED INNOVATION INC.** [US/US]; 2901 West Coast Highway, Suite 200, Newport Beach, CA 92663 (US).
- (72) Inventors: **DOWNEY, Jonathan**; 509 8th St., Huntington Beach, CA 92663 (US). **MICHINI, Bernard**; 712 Renel Rd., Plymouth Meeting, PA 19462 (US).
- (74) Agent: **ALTMAN, Daniel, E.**; Knobbe Martens Olson & Bear, LLP, 2040 Main Street, Fourteenth Floor, Irvine, CA 92614 (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, 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.

- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, 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, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

- Published:
 - with international search report (Art. 21(3))
 - before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))
- (88) Date of publication of the international search report:
1 August 2013

(54) Title: MODULAR FLIGHT MANAGEMENT SYSTEM INCORPORATING AN AUTOPILOT



(57) Abstract: A modular vehicle management system is described, comprising a controller module configured to control different types of carrier modules. The controller module includes a computer system and optionally one or more sensors. The computer system is configured to perform operations comprising detecting whether a carrier module is connected to the controller module. If the carrier module is connected to the controller module, the carrier module is authenticated. If the authentication fails, operation of the vehicle is inhibited. The control module is configured to determine carrier module capabilities including information regarding a navigation processing device, and/or a radio modem. The controller adapts to the capabilities of the controller module. Using information from the sensors and the navigation processing device, the vehicle management system navigates the vehicle.

WO 2013/055441 A3

A. CLASSIFICATION OF SUBJECT MATTER**G05D 1/10(2006.01)i**

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

B. FIELDS SEARCHEDMinimum documentation searched (classification system followed by classification symbols)
G05D 1/10Documentation 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 modelsElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & keywords: flight management, controller, carrier board, autopilot**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 06-195125 A (NEC CORP.) 15 July 1994 See abstract; paragraphs [0008]-[0037]; and figures 1, 2.	29,30
A		1-28
A	US 2010-0235032 A1 (JUNYONG SUNG et al.) 16 September 2010 See paragraphs [0021]-[0048]; and figures 1-7B.	1-30
A	US 2010-0168937 A1 (MARCO WILLEM SOIJER et al.) 01 July 2010 See paragraphs [0034]-[0047]; and figures 1-4.	1-30
A	US 2009-0114764 A1 (KENNETH E. BUILTA et al.) 07 May 2009 See paragraphs [0023]-[0043]; and figures 1-3.	1-30
A	JP 08-048297 A (JAPAN AVIATION ELECTRON IND. LTD.) 20 February 1996 See paragraphs [0011]-[0013]; and figures 1, 2.	1-30



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family


Date of the actual completion of the international search

30 May 2013 (30.05.2013)

Date of mailing of the international search report

30 May 2013 (30.05.2013)

Name and mailing address of the ISA/KR



Korean Intellectual Property Office
189 Cheongsa-ro, Seo-gu, Daejeon Metropolitan City,
302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

KIM, Do Weon

Telephone No. 82-42-481-5560



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/051227

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 06-195125A	15.07.1994	None	
US 2010-0235032 A1	16.09.2010	KR 10-1194603 B1 KR 10-2010-0102815 A US 8380382 B2	25.10.2012 27.09.2010 19.02.2013
US 2010-0168937 A1	01.07.2010	AT 410763 T DE 102005038017 B3 DE 502006001788 D1 EP 1913569 A1 EP 1913569 B1 ES 2316089 T3 WO 2007-016905 A1	15.10.2008 10.05.2007 20.11.2008 23.04.2008 08.10.2008 01.04.2009 15.02.2007
US 2009-0114764 A1	07.05.2009	AU 2007-342334 A1 CA 2664195 A1 EP 2064117 A2 MX 2009003068 A US 7571879 B2 WO 2008-085558 A2	17.07.2008 17.07.2008 03.06.2009 02.04.2009 11.08.2009 17.07.2008
JP 08-048297A	20.02.1996	JP 2955699 B2	04.10.1999