



US007363129B1

(12) **United States Patent**
Barnicle et al.

(10) **Patent No.:** **US 7,363,129 B1**
(45) **Date of Patent:** **Apr. 22, 2008**

(54) **APPARATUS, SYSTEM AND METHOD THAT INTERFACES WITH AN AUTOMOBILE ENGINE CONTROL UNIT**

2005/0192727 A1* 9/2005 Shostak et al. 701/37
2005/0207936 A1* 9/2005 Berryhill et al. 422/63
2005/0216145 A1* 9/2005 Bellinger et al. 701/29
2006/0090077 A1* 4/2006 Little et al. 713/184

(75) Inventors: **Daniel Barnicle**, San Luis Obispo, CA (US); **Joseph A. Mancuso**, Santa Maria, CA (US); **Peter J. Ryan**, Arroyo Grande, CA (US)

OTHER PUBLICATIONS

Air Logic Co., Ltd., "Bluetooth Module Application Note," Class 1, Bluetooth Module Production Information Data Sheet, Aug. 2004, 9 pages.
Elm Electronics, "ELM327 OBD to RS232 Interpreter," (Quick Summary), www.elmelectronics.com, Copyright 2005, 5 pages.
Elm Electronics, "ELM327 OBD to RS232 Interpreter,"(Data Sheet), www.elmelectronics.com, Copyright 2005, 43 pages.
Microchip Technology Inc., "PIC18FXX8 Data Sheet," 28/40-Pin High-Performance, Enhanced Flash Microcontrollers with CAN Module, Aug. 29, 2006, pp. 1-200.
Microchip Technology Inc., "PIC18FXX8 Data Sheet," 28/40-Pin High-Performance, Enhanced Flash Microcontrollers with CAN Module, Aug. 29, 2006, pp. 201-402.
IDSC Holdings, LLC. "PN 125033 Blue-Link?", Nexiq Technologies, http://www.nexiq.com/catalog/product_detail.asp?GID=6&item_Id=8, Copyright 2007, printed May 11, 2007, 2 pages.

(73) Assignee: **Moon Valley Software**, Arroyo Grande, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **11/620,633**

(22) Filed: **Jan. 5, 2007**

(51) **Int. Cl.**
G01M 17/00 (2006.01)
G05D 1/00 (2006.01)

(52) **U.S. Cl.** **701/29; 701/1; 701/102**

(58) **Field of Classification Search** **701/2, 701/29, 102**

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,687,584 B2 2/2004 Andreasen et al.
7,089,099 B2* 8/2006 Shostak et al. 701/32
7,103,460 B1* 9/2006 Breed 701/29
RE39,619 E 5/2007 Andreasen et al.
2002/0133273 A1 9/2002 Lowrey et al.
2003/0231118 A1 12/2003 Kitson
2004/0024502 A1* 2/2004 Squires et al. 701/33
2005/0119809 A1 6/2005 Chen

(Continued)

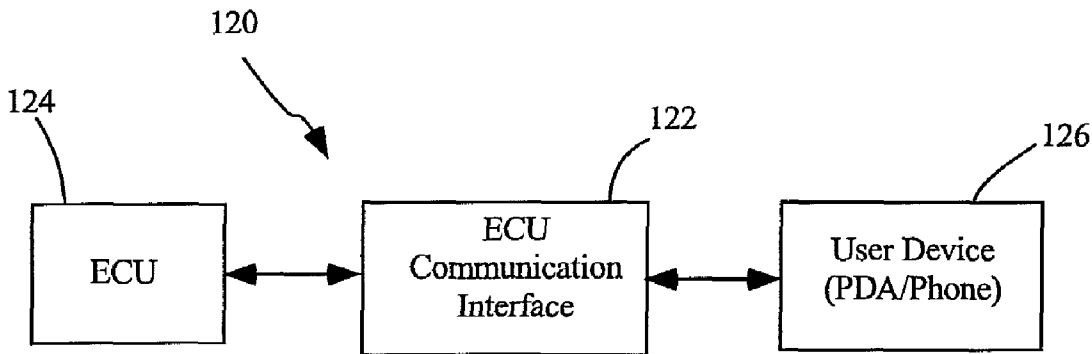
Primary Examiner—John T. Kwon

(74) *Attorney, Agent, or Firm*—Thomas F. Lebens; Sinshelmer Juhnke Lebens & McIvor, LLP

(57) **ABSTRACT**

The present embodiments provide methods, apparatuses, and systems that interface with automobile Engine Control Units (ECU). In some embodiments, methods are provided that communicate with an ECU by establishing a wireless communication link with a remote device, coupling with an ECU, pairing the remote device with the ECU, identifying a protocol to communicate with the ECU, and transferring communications between the remote device and the ECU.

17 Claims, 18 Drawing Sheets



OTHER PUBLICATIONS

Davis, "CarChip All-in-one Driving and Engine Performance Monitor," Davis Automotive, <http://www.davisnet.com/drive/products/carchip.asp>, printed May 11, 2007, 3 pages.

Performance Scan, LLC., "Digimoto 5.0 DigiScan Bluetooth Package," Digimoto, <http://www.digimoto.com/shop/pc-25-4-digimoto-50-digiscan-bluetooth-package.aspx>, Copyright 2006, printed May 11, 2007, 1 page.

Carmd.com Corporation, "About the Product—How to Use," CarMD.com, <http://www.carmd.com/AboutTheProduct/HowToUse.aspx>, Copyright 2005-2007, printed May 8, 2007, 2 pages.

Autoengenuity, LLC, "OBD 2 Scan Tool—Professional PC and PDA Diagnostics," <http://www.autoengenuity.com/index.html>, Copyright 2003-2007, printed May 8, 2007, 2 pages.

Vital Engineering Limited, "The Car-Pal OBD-II Vehicle Interface Unit," <http://www.vitalengineering.co.uk>, Copyright 2006, printed May 7, 2007, 3 pages.

KBM Systems Ltd., "OBDDKey Product Range: OBD Bluetooth," http://obdkey.com/obd_bluetooth_info.asp?, Copyright 2007, printed May 7, 2007, 2 pages.

Carcheckup LLC, "Know Before You Go!" <http://www.carcheckup.com/>, Copyright 2002-2007, printed May 8, 2007, 2 pages.

Scantool.net, "ElmScan 5 Wireless," http://www.scantool.net/products/product_info.php?cPath=8_6&product_id=37, printed May 8, 2007, 1 page.

Burger, Guido, "Bluetooth Project Based on OBD-2 Chipset," www.blueobd.com/, Copyright 2007-2007, printed May 8, 2007, 3 pages.

I+ME ACTIA, "Blue XS Prototype," www.ime-actia.com, printed May 14, 2007, 2 pages.

UKOBD, Ltd., MBD3200BT mOByDic Bluetooth Interface, <http://www.ukobd.co.uk>, date first learned of publication: Jun. 8, 2007, 2 pages.

Mobile Computing Solutions, Bluetooth OBD II Interface, <http://store.mo-co-so.com/bluetooth-obd-ii-interface-p-31.html>, date first learned of publication: Jun. 8, 2007, 2 pages.

Ebay Motors, OBDII Scan Tool Bluetooth ISO Wireless, <http://cgi.ebay.com/ebaymotors/OBDII-OBD-II-OBD2-2-Scan-Tools>, date first learned of publication: Jun. 8, 2007, 6 pages.

* cited by examiner

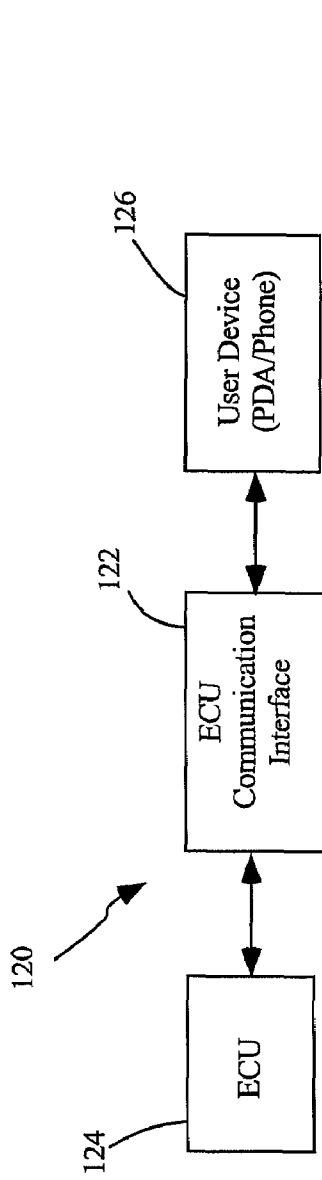


FIG. 1

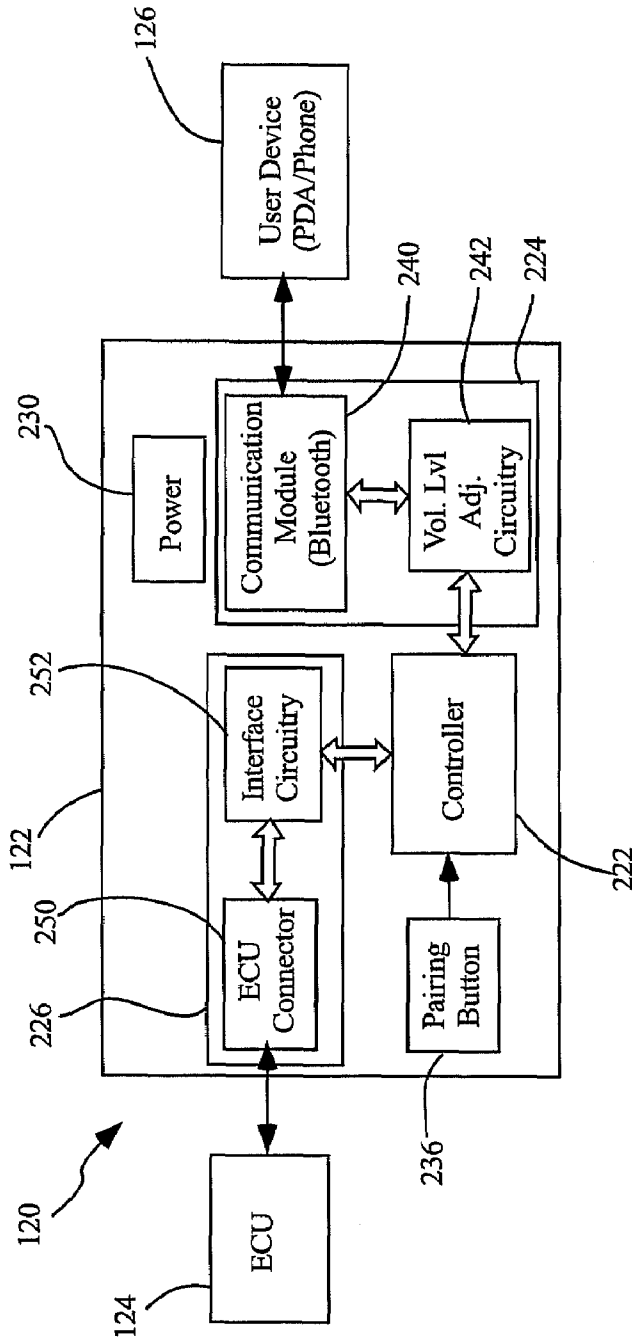


FIG. 2

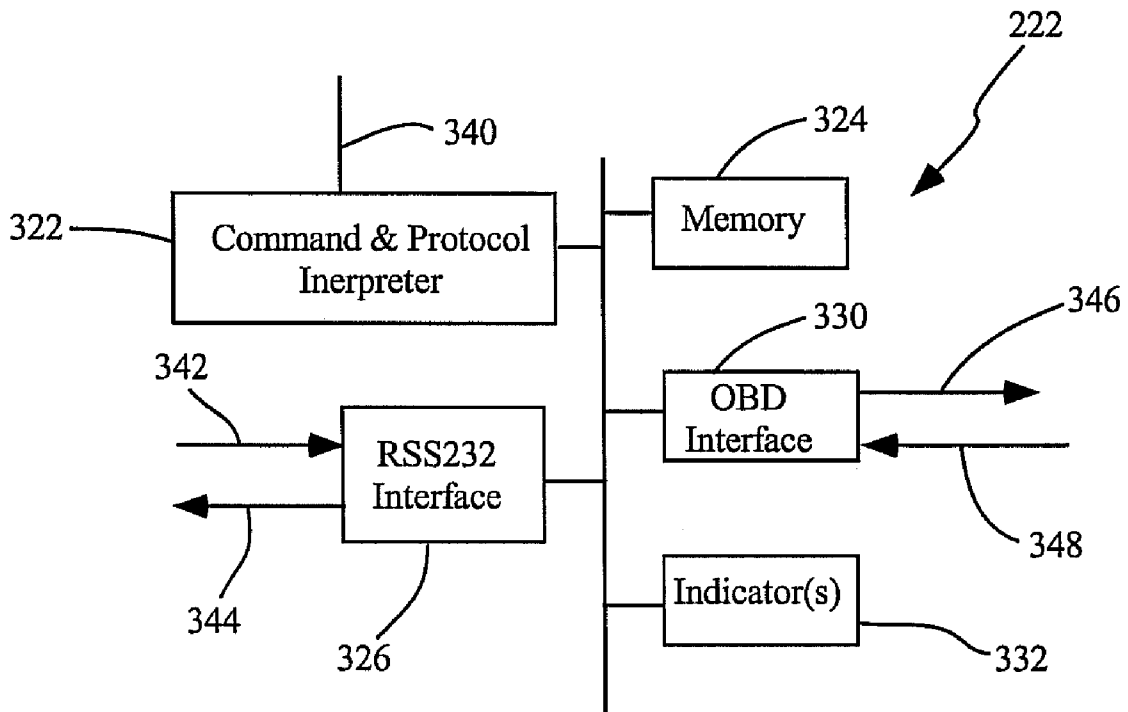


FIG. 3

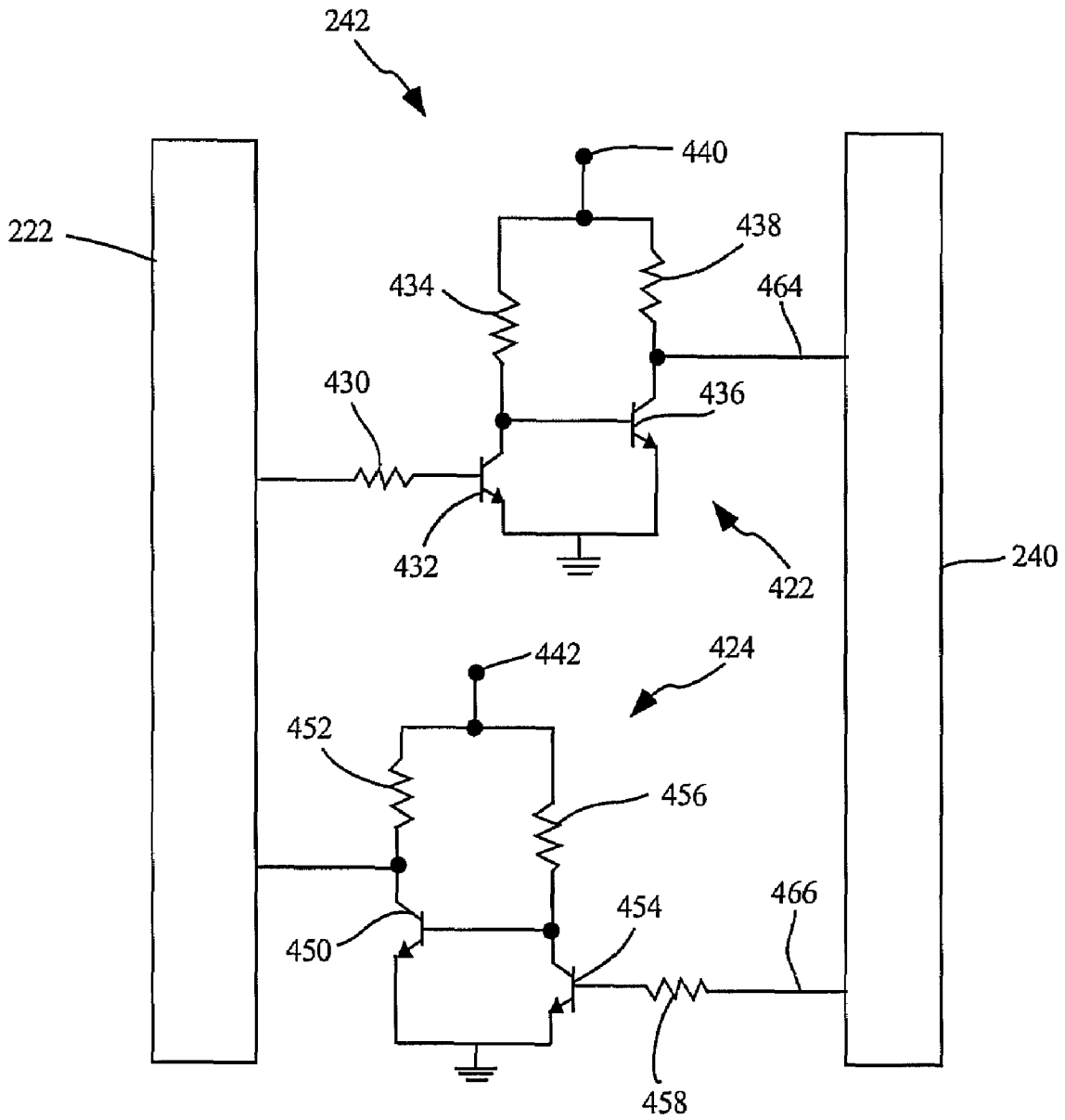


FIG. 4

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.