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61/154,646 23 February 2009 (23.02.2009) US(71) Applicant (for all designated States except US): **FIELD DIAGNOSTIC SERVICES, INC.** [US/US]; 444 Oxford Valley Road, Suite 300, Langhorne, PA 19047 (US).

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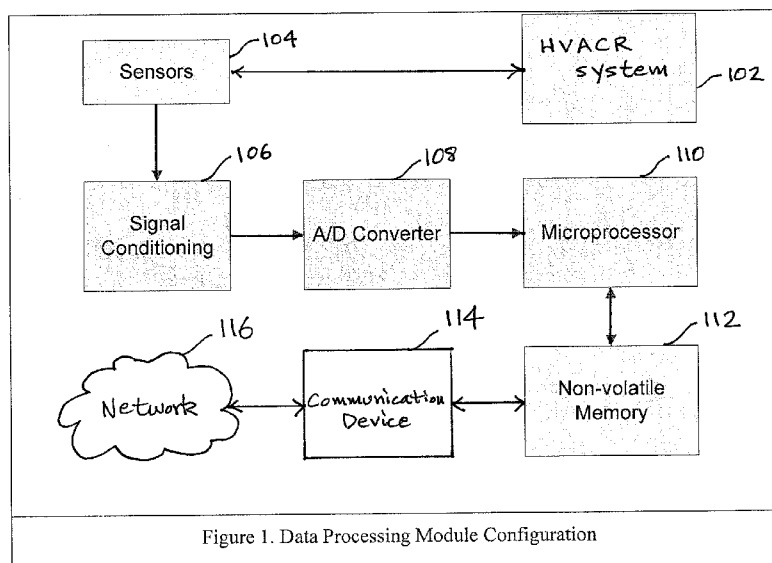
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(88) Date of publication of the international search report:  
20 January 2011

(54) Title: CONTROLLER AND METHOD FOR IMPROVING THE EFFICIENCY OF HEATING AND COOLING SYSTEMS



(57) Abstract: A computerized hardware and software system and a method for processing and storing measured data from various inputs (sensors) that reduces the data memory requirements and data transmission requirements of heating, ventilation, air conditioning, and/or refrigeration systems (HVAC&amp;R) by creating a more compact data structure that retains data resolution, as required, based on the intended use of the measured data. The system and method are especially applicable to data processing and storage associated with the monitoring of such thermal equipment and systems but may be used in other data collection of other types of systems where system performance monitoring is desired.

## INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/US2010/025060****A. CLASSIFICATION OF SUBJECT MATTER****H04L 12/28(2006.01)i, G05D 23/00(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)

H04L 12/28; F23N 5/20; G05B 21/00; G05B 13/00; F25B 39/02; G05D 23/19; F28F 9/00; F24D 19/10; 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) &amp; Keywords: heating, ventilation, air conditioning, refrigeration, sensor, steady state performance, sampling real-time data, memory, parameter, communication network and similar terms.

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2005-0288822 A1 (RONALD RAYBURN) 29 December 2005 See whole document.	13
Y	US 2008-0054082 A1 (EDWARD EVANS et al.) 06 March 2008 See abstract, claims 1-2 and figures 1-4.	13
A	US 2004-0158359 A1 (SANDOR A. FRECSKA et al.) 12 August 2004 See abstract, claim 1 and figures 3, 4.	1-21
A	US 2009-0025418 A1 (DE LA CRUZ JOSE REUL et al.) 29 January 2009 See abstract, claims 1-4 and figures 1, 4, 5.	1-21

☐ 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

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"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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/025060**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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