



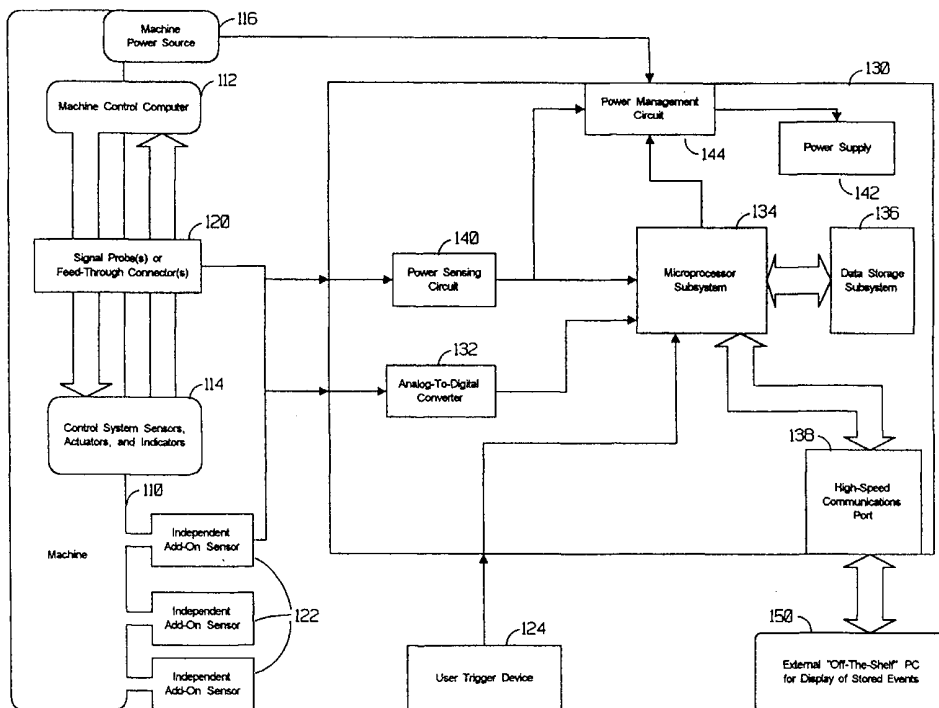
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁷ : G05B 23/02</p>	<p>A3</p>	<p>(11) International Publication Number: WO 00/17721 (43) International Publication Date: 30 March 2000 (30.03.00)</p>
<p>(21) International Application Number: PCT/US99/21921 (22) International Filing Date: 21 September 1999 (21.09.99) (30) Priority Data: 60/101,230 21 September 1998 (21.09.98) US 60/145,636 26 July 1999 (26.07.99) US (71) Applicant (for all designated States except US): MASTER TECH ENGINEERING, INC. [US/US]; 11 Pine Street, Lynnfield, MA 01940-2523 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): COOPER, Robert, P. [US/US]; 11 Pine Street, Lynnfield, MA 01940-2523 (US). MAHON, John, J. [US/US]; 414 Concord Street, Framingham, MA 01702 (US). (74) Agents: JOHNSON, Rodney, D. et al.; Hamilton, Brook, Smith & Reynolds, P.C., Two Militia Drive, Lexington, MA 02421 (US).</p>	<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report. (88) Date of publication of the international search report: 24 August 2000 (24.08.00)</p>	

(54) Title: EVENT RECORDER

(57) Abstract

A system is used with a computer-controlled machine having real-time electrical signals corresponding to the operation of a machine, for real-time data processing of electrical signals occurring within the machine. The machine includes a controller (112) and an event node, such as an actuator, sensor, or indicator (122), with an interconnect system disposed between the controller and the event node for exchanging data. The system includes an event data recorder (136) coupled to the interconnect system for selectively storing event data. The machine comprises an automotive vehicle. The event recorder need not be connected to the serial data output of the controller but is directly coupled to the real-time electrical signals occurring between the controller and its associated sensors and actuators. This allows for direct monitoring and diagnostics of the real-time system activity within the automotive vehicle, including intermittent problems which can be missed by or even caused by the controller. The event data recorder can be triggered (124) to store the data by a user input by pressing a push-button positioned on a wire-less transmitter that communicates with the event data (150) recorder. Feedback is provided to the user indicating that the event data recorder is storing the event data.



This allows for direct monitoring and diagnostics of the real-time system activity within the automotive vehicle, including intermittent problems which can be missed by or even caused by the controller. The event data recorder can be triggered (124) to store the data by a user input by pressing a push-button positioned on a wire-less transmitter that communicates with the event data (150) recorder. Feedback is provided to the user indicating that the event data recorder is storing the event data.

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INTERNATIONAL SEARCH REPORT

International Application No

PC1/US 99/21921

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G05B23/02

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)
IPC 7 G05B

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

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 044 485 A (SUNSTRAND CORP) 15 October 1980 (1980-10-15)	1-3,13, 20,21, 28,50, 51,60
Y	the whole document	7,8,53, 57,63
Y	--- US 4 853 859 A (MORITA IZURU ET AL) 1 August 1989 (1989-08-01) the whole document	7,8,53
X	--- US 4 926 331 A (WINDLE WILLIAM E ET AL) 15 May 1990 (1990-05-15) the whole document	1-4,14
A Y	--- -/--	29 57,63

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

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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.
- *Z* document member of the same patent family

Date of the actual completion of the international search

18 January 2000

Date of mailing of the international search report

19. 05. 2000

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INTERNATIONAL SEARCH REPORT

International Application No

PC1/US 99/21921

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 742 915 A (STAFFORD DARRELL E) 21 April 1998 (1998-04-21)	1-4
A	the whole document	29

X	US 4 625 697 A (HOSAKA AKIO) 2 December 1986 (1986-12-02) column 12, line 6 -column 24, line 37; figures 7A-8	1-4

X	US 4 533 962 A (DECKER RONALD R ET AL) 6 August 1985 (1985-08-06) the whole document	1-4

P,X	US 5 848 365 A (COVERDILL CARY N) 8 December 1998 (1998-12-08) the whole document	1-4

A	US 4 689 757 A (DOWNING GENE ET AL) 25 August 1987 (1987-08-25) the whole document	29

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 99/21921

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-63

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/US 99/21921

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1-63

A system for diagnosing failures in a machine

2. Claims: 64-69

A system for conveying information from a device to a machine

3. Claims: 70-75

A system for testing a machine comprising a testing device
and a wireless device

4. Claims: 76-81

A cabling device

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intel. Application No

PCT/US 99/21921

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