

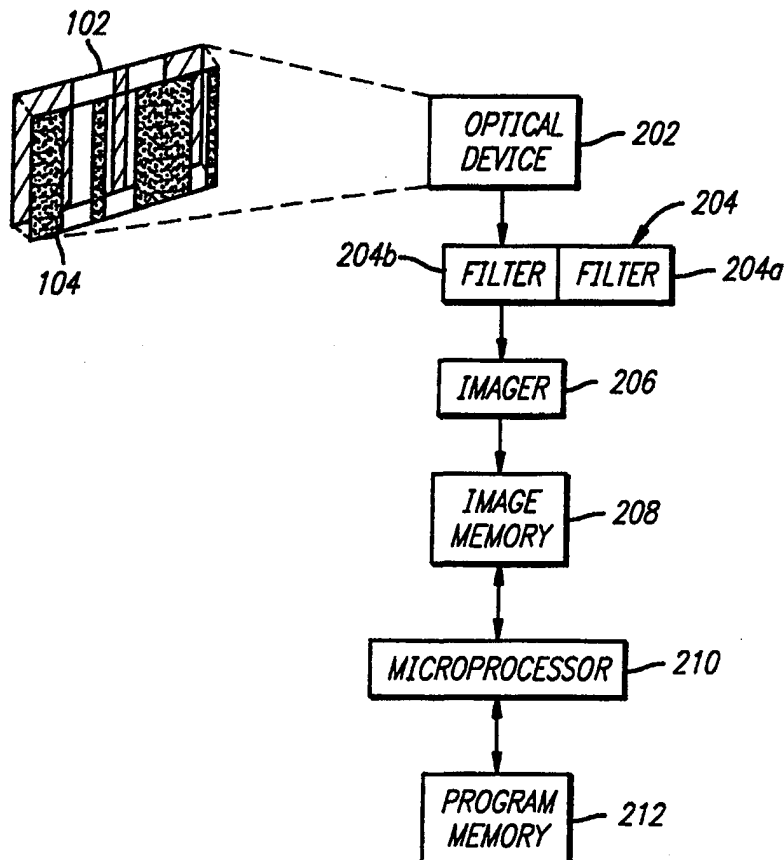


INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : G06K 19/06	A3	(11) International Publication Number: WO 98/50882 (43) International Publication Date: 12 November 1998 (12.11.98)
(21) International Application Number: PCT/US98/09161 (22) International Filing Date: 4 May 1998 (04.05.98) (30) Priority Data: 08/850,973 5 May 1997 (05.05.97) US (71) Applicant: INTERMEC TECHNOLOGIES CORPORATION [US/US]; 6001 - 36th Avenue West, Everett, WA 98203-9280 (US). (72) Inventors: ROSS, James, G.; 22710 Second Avenue, S.E., Bothell, WA 98021 (US). WIKLOF, Christopher, A.; 3531 - 99th Street S.E., Everett, WA 98298 (US). (74) Agents: BERLINER, Brian, M. et al.; Graham & James LLP, 14th floor, 801 S. Figueroa Street, Los Angeles, CA 90017-5554 (US).		(81) Designated States: JP, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 1 April 1999 (01.04.99)

(54) Title: MULTI-COLORED SYMBOLOGY METHOD AND APPARATUS**(57) Abstract**

Multiple colors are used in connection with one or more encoded symbols to increase the information density of the encoded symbols. The multiple colors can be used to form linearly independent encoded symbols that are overlayed on top of each other to form a composite encoded symbol. The linearly independent encoded symbols may be used to designate different types of information, or can designate separate levels of information in which certain levels can have restricted access. Alternatively, the multiple colors can be used to form a single linearly dependent encoded symbol in which the selected combination of colors defines data states of corresponding elements of a one or two dimensional matrix. Registration marks are used to insure proper print registration of the differently colored elements to insure linear dependency. In either embodiment, the colors can be distinguished using electro-optical imaging techniques.



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INTERNATIONAL SEARCH REPORT

Intern. Appl. No.

PCT/US 98/09161

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 G06K19/06

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 6 G06K

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	US 5 576 528 A (CHEW STEVEN M ET AL) 19 November 1996	1-3,5
Y	see column 4, line 53 - column 8, line 10; figures 2-4	6-9, 14-19
Y	US 5 005 873 A (WEST MICHAEL A) 9 April 1991 see claims 1-6; figures 1,5	6-9, 14-19
X	PATENT ABSTRACTS OF JAPAN vol. 017, no. 029 (P-1472), 20 January 1993 & JP 04 251396 A (NEC CORP;OTHERS: 01), 7 September 1992 see abstract	22,27, 28,33, 38,39



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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Date of the actual completion of the international search

20 January 1999

Date of mailing of the international search report

08. 02. 1999

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INTERNATIONAL SEARCH REPORT

Intern. Application No

PCT/US 98/09161

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 5 355 001 A (FUJIMOTO TAKEO ET AL) 11 October 1994	22,24, 26,27, 33,35-38
A	see column 4, line 4 - column 5, line 18; claim 1; figure 1	28,39
X	----- PATENT ABSTRACTS OF JAPAN vol. 017, no. 590 (P-1635), 27 October 1993 & JP 05 174204 A (OLYMPUS OPTICAL CO LTD), 13 July 1993 see abstract -----	22, 26-28, 33,37-39

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 98/09161

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:

see additional sheet

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.:

Remark on Protest

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

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-21

Method, and corresponding encoding system, of combining a plurality of encoded symbols into an aggregate encoded symbol by assigning to each of said symbols a unique color and by printing each of said encoded symbols on top of each other in the corresponding unique color.

2. Claims: 22-42

Method of encoding data, and corresponding encoding system, by assigning a combination of zero or more colors to individual elements of a matrix of elements.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter. nal Application No

PCT/US 98/09161

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