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(71) Applicant: TERADYNE, INC. [US/US]; 321 Harrison Avenue, Boston, MA 02118 (US).

(72) Inventor: BOTHAM, Michael, P.; 11 New Fletcher Street, Chelmsford, MA 01824 (US).

(74) Agent: WALSH, Edmund, J.; Teradyne, Inc., 321 Harrison Avenue, Boston, MA 02118 (US).

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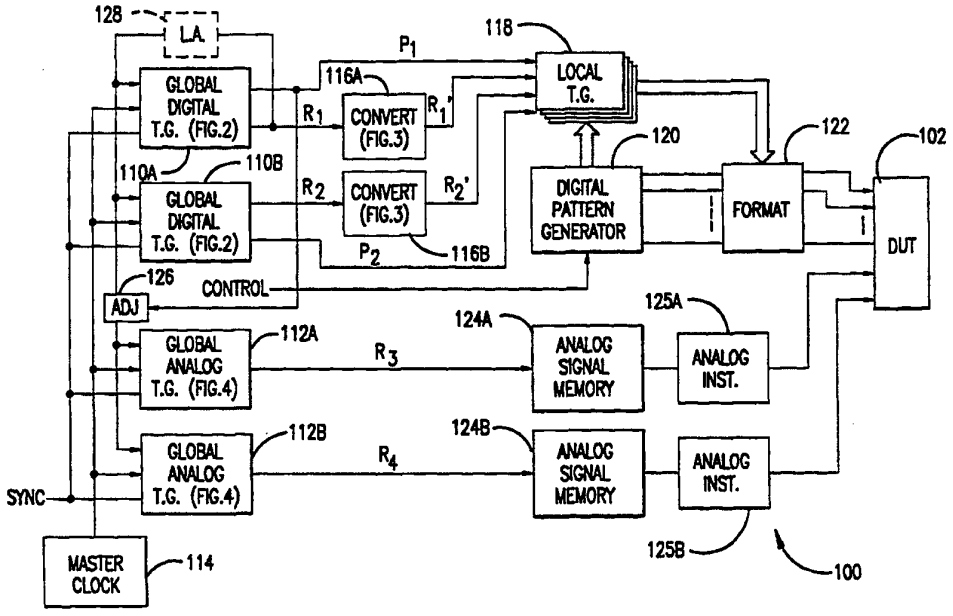

(57) Abstract

Automatic test equipment with programmable timing generators to generate digital signals and analog signals. The digital timing generator can be programmed to generate timing signals with a resolution finer than that of the master clock of the timing generator. Extremely fine resolution is achieved by specifying the numerator and denominator of a fractional portion of a period. A similar arrangement is used to allow fine frequency resolution for the analog timing generator. The fine resolution achievable with the timing generators allows the digital timing generator to be synchronized to the analog timing generator.

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INTERNATIONAL SEARCH REPORT

Interr nal Application No
PCT/US 95/15712

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G01R31/316 G01R31/317 G01R31/3167 G06F11/273 H03K5/13 H03K3/72

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 G01R G06F

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.
A	US 4 231 104 A (ST CLAIR RICHARD P) 28 October 1980 see column 1, line 20 - line 31 see column 1, line 64 - column 2, line 21 see column 2, line 40 - column 3, line 62; figures 1,3 ---	1,13
A	GB 2 252 418 A (TERADYNE INC) 5 August 1992 see page 5, line 8-18 see page 6, line 28 - page 7, line 2 see page 14, line 11 - page 16, line 24 see page 26, line 3 - page 28, line 5; figures 1,4-6 --- -/--	1,13

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in 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 document 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 another 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

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
9 July 1996	18.10.96

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax (+31-70) 340-3016	Treleven, C

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INTERNATIONAL SEARCH REPORT

Interr nal Application No
PCT/US 95/15712

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 101 761 A (MERRYMAN WAYNE R) 18 July 1978 see column 1, line 19-23 see column 1, line 33-67 see column 3, line 27-30 see column 3, line 52-68 see column 5, line 6-30 see figures 1,2,5	1
A	EP 0 474 274 A (SCHLUMBERGER TECHNOLOGIES INC) 11 March 1992 see column 2, line 58 - column 3, line 16 see column 4, line 15 - column 5, line 9 see column 7, line 18-22 see column 7, line 42-47 see figures 2-5	13
A	EDN, 25 APRIL 1991, USA, vol. 36, no. 9, ISSN 0012-7515, pages 109-112, 114, XP002007954 CONNER D: "ATE pin electronics. Versatile ICs reach beyond ATE systems" See page 112, left column, "Remove timing skew"- page 114, central column, line 16; Figure 1.	1

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/15712

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. claims 1-4,13-17: generation of delayed timing pulses
2. claims 5-12: method of synchronising at least two global generators

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 searches 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.:

1-4,13-17

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

Information on patent family members

Interr nal Application No
PCT/US 95/15712

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
US-A-4231104	28-10-80	CA-A-	1129504	10-08-82
		CA-A-	1128147	20-07-82
		DE-A-	2917017	31-10-79
		FR-A-	2424671	23-11-79
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		JP-A-	6094796	08-04-94
		US-A-	5477139	19-12-95