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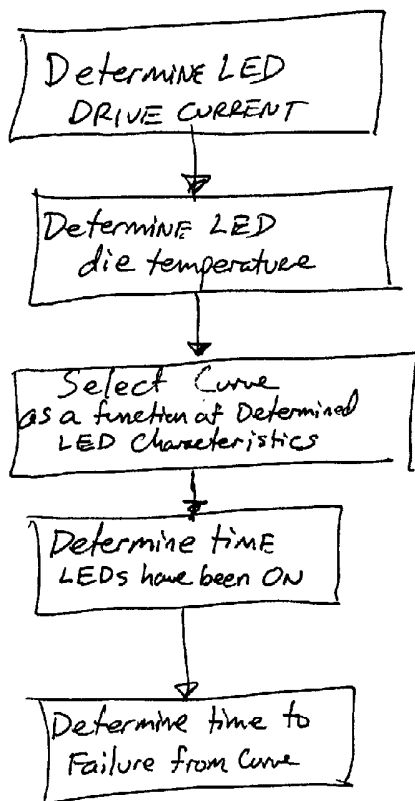
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[Continued on next page]

(54) Title: SOLID STATE LIGHT WITH SELF DIAGNOSTICS AND PREDICTIVE FAILURE ANALYSIS MECHANISMS



(57) Abstract: A solid state light apparatus ideally suited for use in traffic control signals having a Self Diagnostic/Predictive Failure Analysis (SD/PFA) function facilitating a real time status of the signal as well as prediction of failure years in advance of the actual failure. Unlike incandescent signals, all LED based signals degrade over time until they are no longer in DOT light output specs. Current state of the art solid state signals must be periodically monitored to see if the light output is in spec. This is done by having DOT or contracted personnel ascend in a bucket truck and place a light meter on the signal typically on an annual basis. A signal system with SD/PFA coupled with a modem or RF link provides real time data, without the use of a bucket truck on the status of the signal. The system also provides data which allows the determination via an algorithm of when the signal will go below light output specs in the future.

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INTERNATIONAL SEARCH REPORT

International Application No

PC JS 01/25842

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 G01R31/28		
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 G01R G08G		
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) PAJ, EPO-Internal, WPI Data, IBM-TDB, INSPEC		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 09, 13 October 2000 (2000-10-13) & JP 2000 172986 A (NIPPON SIGNAL CO LTD:THE), 23 June 2000 (2000-06-23)	1,7, 13-16, 18,20
Y	abstract	2-5, 8-11, 17-20
Y	--- EP 0 974 947 A (SIEMENS AG) 26 January 2000 (2000-01-26) column 2, line 53 -column 3, line 29 --- -/--	2-5, 8-11, 17-20
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.		<input checked="" type="checkbox"/> 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		"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
"E" earlier document but published on or after the international filing date		"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
"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)		"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.
"O" document referring to an oral disclosure, use, exhibition or other means		"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed		
Date of the actual completion of the international search	Date of mailing of the international search report	
17 April 2002	23.07.02	
Name and mailing address of the ISA 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	Authorized officer Lopez-Carrasco, A	

INTERNATIONAL SEARCH REPORT

International Application No

PC US 01/25842

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 5 663 719 A (LEWIS DAVID D ET AL) 2 September 1997 (1997-09-02) abstract column 2, line 31 - line 60 figure 4	1-3, 16-20
A	--- PATENT ABSTRACTS OF JAPAN vol. 2000, no. 11, 3 January 2001 (2001-01-03) & JP 2000 222686 A (SANKOSHA:KK), 11 August 2000 (2000-08-11) abstract	1,16
A	--- PATENT ABSTRACTS OF JAPAN vol. 1998, no. 06, 30 April 1998 (1998-04-30) & JP 10 039836 A (HITACHI LTD;YAMATAKE HONEYWELL CO LTD), 13 February 1998 (1998-02-13) abstract -----	1,16

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.:

1-5,7-11,13-20

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: 1-5,7-11,13-20

Monitoring electrical parameters in a solid state drive

2. Claims: 6,12

Monitoring temperature of a solid state light drive

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PC JS 01/25842

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2000172986 A	23-06-2000	NONE	
EP 0974947 A	26-01-2000	NONE	
US 5663719 A	02-09-1997	US 5457450 A	10-10-1995
JP 2000222686 A	11-08-2000	NONE	
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