

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/JP2018/033178

**A. CLASSIFICATION OF SUBJECT MATTER**  
 Int. Cl. H03K19/177 (2006.01) i, G06F11/16 (2006.01) i, G11C29/00 (2006.01) i,  
 H01L21/8239 (2006.01) i, H01L27/105 (2006.01) i, H01L45/00 (2006.01) i,  
 H01L49/00 (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)  
 Int. Cl. H03K19/177, G06F11/16, G11C29/00, H01L21/8239, H01L27/105,  
 H01L45/00, H01L49/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
 Published examined utility model applications of Japan 1922-1996  
 Published unexamined utility model applications of Japan 1971-2018  
 Registered utility model specifications of Japan 1996-2018  
 Published registered utility model applications of Japan 1994-2018

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

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|-----------|---|-----------------------|
| A         | JP 2003-177935 A (HITACHI, LTD.) 27 June 2003, paragraphs [0033], [0034], fig. 1, 6, 10 (Family: none)                            | 1-10                  |
| A         | WO 2017/126544 A1 (NEC CORP.) 27 July 2017, paragraphs [0082]-[0087], fig. 12, 13 (Family: none)                                  | 1-10                  |
| A         | US 2008/0288758 A1 (ROBERT BOSCH GMBH) 20 November 2008, paragraphs [0047]-[0049], fig. 1 & WO 2006/045774 A1 & DE 102004051937 A | 1-10                  |

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  
 "E" earlier application or patent but published on or after the international filing date  
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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  
 "&" document member of the same patent family

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| Date of the actual completion of the international search<br>28.09.2018 | Date of mailing of the international search report<br>09.10.2018 |
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| Name and mailing address of the ISA/<br>Japan Patent Office<br>3-4-3, Kasumigaseki, Chiyoda-ku,<br>Tokyo 100-8915, Japan | Authorized officer<br><br>Telephone No. |
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PCT/JP2018/033178

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No. |
|-----------|---|-----------------------|
| A         | ZHENG, Meisong et al., DAO; Dual Module Redundancy with AND/OR Logic Voter for FPGA Hardening, In: 2015 First International Conference on Reliability Systems Engineering (ICRSE), China: IEEE, 2015, pp. 1-5 | 1-10                  |