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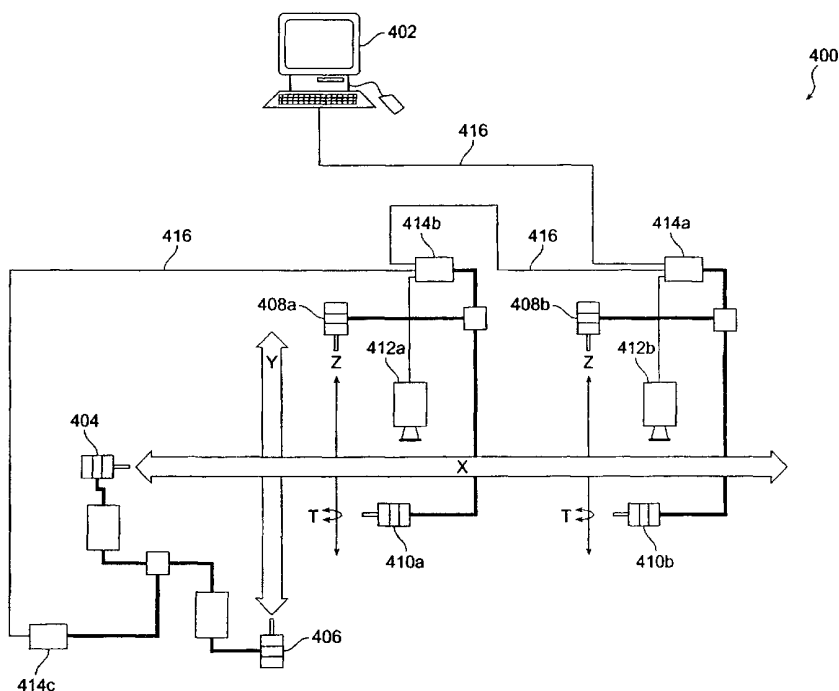
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[Continued on next page]

(54) Title: **HARDWARE ARCHITECTURE AND METHOD FOR DISTRIBUTED MACHINE CONTROL**



(57) Abstract: A hardware architecture links control modules to a host computer in a high-speed serial bus network to achieve efficient distributed machine control. Each control module includes a communications unit and a function unit that are coupled to each other as a part of the control module. All communications units are similarly constructed with each having a unique identification set by a component thereof and provide communications between control modules and the host computer. The function unit of each control module is distinctly configured for executing functions specific to the particular control module to which it is attached. The high-speed serial bus provides deterministic synchronization of data transfers between control modules and the host computer using either an isochronous mode

and protocol or an asynchronous mode with a fixed real-time clock issuing data requests at fixed time intervals. Data transfers do not require host computer involvement and can occur directly between control modules. Each control module maintains data blocks containing the desired control status from the host computer and the current state of all variables related to the particular control module. These data blocks are available to the host computer and each control module at fixed time intervals without the need for data requests. This permits near real-time intervention or change of state within the controlled machine processes.



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B. FIELDS SEARCHED

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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)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Y	the whole document	2-4,6-9, 11-17, 19,20, 23-25, 27-30, 32-38, 40,42, 50,58, 60,61

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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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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.

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