

## ABSTRACT

### **The Design Of a Medium Access Control Technique**

#### **Based on the IEEE Standard 802.4**

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Factory automation is an important tool used for boosting productivity and efficiency in many industries. The Institute of Electrical and Electronics Engineers (IEEE) 802.4 Token Passing Bus Access Method is now widely accepted as the access control mechanism in factory networks.

This thesis describes both the hardware and software development relevant to a token-bus interface for an Arcom Control System 6809 STEbus microcomputer. The hardware is developed around the Advanced Data Link Controller and the Programmable Timer Module. The access control mechanism to the network was implemented in software.

The first phase of this project involved the design, construction and testing of a Network Interface Unit and a Programmable Timer Board. These interfaces were based upon the general principles illustrated in the IEEE 802.4 Standard. Cost and availability of equipment were major factors in the design process.

The second phase involved the development, writing and testing of the software for the Access Control Machine of the Medium Access Control Layer of the token-bus method.

The major goal of this project was to lay the foundation work for the design and eventual implementation of a complete low-cost Local Area Network based upon a token-passing bus access control mechanism.

The goals of this project were met in that the hardware designed and constructed, functioned according to its design specifications and the basic logic of the ACM was successfully implemented in software and tested.

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