- Microsoft Windows NT or Windows 2000 Professional compatible
- Multiple network support
  - 4 Serial Ports
  - 4 Supervisor Ports
  - MicroDCI DataLink Support
  - MicroDCI MicroLink Support
- Communication Network Wizzard
- OPC Compliant
- Automatic Tag recognition
- Basic Controller Configuration
- Support for previous generation MicroDCI controller products
- Ethernet based Remote Communication Network support
- Direct access to MicroTools and LoopMaster configuration software
- Simultaneous configuration and client software access
Introduction

The Micro-DCI Communication Services is the foundation for all ABB communication applications involving the Micro-DCI family of controllers. The Communication Services are designed to run under Microsoft® Windows™ NT 4.0 or Windows™ 2000 Professional.

The Communication Service can be broken down into several layers or applications each designed to perform a specific function but each tightly woven into a solid set of tools design to simplify the interaction of the user with the controllers.

The principle user interface is an application called Super32. The name is derived from the previous generation of software, Supervisor-PC. Underlying Super32 is a set of services which automatically scan the user created networks for instrument types and addresses. The result is a network tree which can be collapsed or expanded as need dictates.

Overview

The Micro-DCI Communications Service is a behind the scenes kind of software that combines the many elements of communication to the Micro-DCI family of controllers into a tool that can be used without obvious interaction.

Micro-DCI Communication Service was designed to be user friendly, and perform most of the work based on simple instructions. The Install Wizard handles the actual software installation and the Network Wizard walks you through the Micro-DCI communication network setup.

Micro-DCI Communication Services will support up to eight individual networks of controllers. Up to four networks can be PC serial ports (COM1 through COM4). An additional four networks can be Supervisor communication cards.

The PC serial port communications uses the ABB
Micro-DCI DataLink communications protocol. This communications protocol is standard with each Micro-DCI product. The Supervisor communication card, also an ABB product, was developed in two versions, DataLink and MicroLink. Both the DataLink and MicroLink communication protocols are supported.

Each of the eight networks can have up to thirty-two (32) controllers. The controllers can be any of the current generation devices such as 53MC5000 or 53SL6000 or they can be older generation products such as the 50KM1000, 50KM2000, the 53MC1000 53MC2000, or the 53MC4000.

**Network Wizard**

The foundation of the Micro-DCI Communication Services is the implementation of the controller communication networks. These networks are used to gain access to the variety of controller products in the ABB Micro-DCI product family. It is thus imperative that the tools for implementing these networks be as simple and straight forward as possible.

The Micro-DCI Network Wizard is the tool for the implementing communication networks. A five step process to select the type of network desired, name the network, choose whether the network will participate in a Master/Backup configuration, set the network parameters such as baud rate and parity and finish the process by verifying the information you just entered is correct.

Networks can be added or removed at any time and network parameters can be changed as the need dictates.

Standard PC serial port communications makes use of the Micro-DCI DataLink communications. The Supervisor communication card, an ABB product, was developed in two versions, DataLink and MicroLink.

The Micro-DCI Communications Network also supports a Local internal network of controllers. In this instance the controllers and communications exist in the PC memory only. This configuration of controllers can be used for testing as well as actual control if connected to real Inputs and Outputs.
Controller Support

Over the last twenty years, a variety of Micro-DCI controllers have been introduced, many of which are still in use today. The most current version of the Micro-DCI product line is the 53MC5000 Design Level B controller.

The Micro-DCI Communications Services has been designed to provide communication access and support for all generations of the Micro-DCI product line including the 53MC1000, 53MC2000, 53MC4000, 50KM1000, 50KM2000, 53SL6000, 53ML5100, 53IT5100, 53SL5100, 53MC5000A and the 53MC5000B.

Features supported for these controllers include Database Uploading/Downloading, FTRAN programming support such as edit, compile and upload/download, and database configuration. For the 53MC5000A/B and the 53SL6000 controllers, more advanced configuration/programming tools are available (MicroTools and LoopMaster respectively) which can be initiated directly from Super32.

By clicking on the respective instrument, applicable windows will pop up listing options and features available for a particular instrument.

All database information and/or FTRAN programs are maintained in a directory tree with individual program folders for each controller. Controller folder names are created to match the controller tag name. Files within the folder are assigned an appropriate file name and extension.
Over time the evolution of the Micro-DCI controllers has included different data types for data storage. One such data type is the alphanumeric or “A” data type. “A” data types are 10 characters in length. Typical application for the “A” data type is to store information such as engineering units and tag names. In the case of more recent generation of products (53MC5000A & B), these tag names are used as references for specific functions or software modules within the controller.

These software modules may have multiple pieces of information associated with them. This information for say an analog input can be referenced by the analog input module tag name. This information can include the measured value (in engineering units), whether the input is linear or square root extracted, if there is any digital filtering on the input, the input type (0-20 mA or 4-20 mA) and the span and zero references for the input type. Each piece of information will have a reference we call an “atom” that describes the type information being referenced.

The Micro-DCI Communication services employs a special server called a Tag Server that searches all the system networks for all the controller tags and then finds all the tag references in all the controllers.

All the tags, network wide, should thus be unique. Editing tools are provided to search and edit the tag names within the entire system.

**Micro-DCI DDE Server**

The Micro-DCI Communications services includes a Dynamic Data Exchange (DDE) server called **udcidd.exe**. DDE is a client/server communications application designed to allow software programs (applications) to share data. A common example of a DDE exchange is cutting and pasting from one computer program to another. Any software application can be both a client and a server. It really depends on your application. Clients usually ask for data while servers provide the data requested.

DDE as it applies to process control is exactly the same. The purpose of the DDE in our situation is to allow real-time data access from the Micro-DCI Instruments to third party DDE clients such as Microsoft Excel.

The Micro-DCI Communication Services includes a DDE server to provide data requested by a DDE client. There is a standard format the data must conform to in order to make the data exchange. In the case of Micro-DCI, the user has access to all module tag names in the controllers. These tag names are made available through the Super32 network application.
The most recent feature addition to the Micro-DCI Communication Services software is the Micro-DCI OPC Server (Object Linking and Embedding for Process Control). Object Linking and Embedding is the same Microsoft technology that allows you to exchange information between applications such as Microsoft Word and Microsoft Excel. When applied to the Process Control industry, this technology allows software application in the industrial world to pass information via a common interface.

The OPC interface consists of two parts; a server that provides a hardware/software interface to the instruments and a client which accesses the server and provides data from the controller (via the server) to a user application. The OPC Client is usually directly associated with the user application or is imbedded in the user application.

The OPC server is a behind the scenes application. It is normally started when the PC is first started up. There is no server configuration required since the server uses the Micro-DCI Communication services setup to gain access to the controllers.

The client application normally includes a browser that will list all active OPC server applications that are currently running locally (the PC on which the client application is loaded) and remotely (a PC other then that on which the client application is loaded). The browser also typically provides a network tree that displays the available instruments and available data within the instruments. Assigning a particular piece of information from the server to a client requires selection from the tree of available information.

Feature highlights:
* Backwards compatible with OPC release 1.0
* Supports all OPC 2.0 Interfaces except Public Groups and Persistent Files

Direct Access to Configuration Tools

The Micro-DCI Communications Services provides a basic set of configuration tools for all Micro-DCI controller products.

Features supported for all controllers include:
- Database table configuration
- Database Uploading
- Database Downloading

Additional support provided for FTRAN compatible controllers include:
- FTRAN language editor
- FTRAN language compiler
- FTRAN program Uploading
- FTRAN Program Downloading

More advanced configuration/programming tools are available for the for the 53MC5000A/B Process Control Stations, 53SL5100 Single Loop Controllers, 53IT5100 Indicating Totalizer, 53ML5100 Manual Loading Station and the 53SL6000 MicroMite controllers. These tools are directly accessible through the MicroDCI Communication Services. By double clicking the desired controller icon, the appropriate configuration tools can be initiated.

MicroTools (53MT6000) has been designed as a Windows NT/2000 based set of configurations tools for the 53MC5000 series controllers, while the LoopMaster software (53HC2600) is the more advanced configuration tools for the 53SL6000 MicroMite controllers.

For more information on these software products refer to the MicroTools and LoopMaster Specifications respectively.
Simultaneous Configuration and Client Software Access

A valuable feature of the MicroDCI Communications Services is its ability to provide configuration access to the controllers while simultaneously maintaining client application software access. No special hardware orl setup is required. This is a seamless operation on the part of the Communication Services and there is no need to halt client operations to perform configuration operations on any network connected controller.

Micro-DCI OPC Local Server

The Micro-DCI OPC Local Server has full access to the Micro-DCI Communication networks created using the Super32 network wizard.

OPC Over Ethernet Local Area Networks (LAN)

A powerful tool of the OPC architecture is its support for OPC servers located on networked PCs. The figure to the right is an illustration of an OPC connection to a MicroDCI controller network located on an ethernet networked PC.
MicroTools
Model 53MT6000
Configuration Tools

The advanced configuration tools for the 53MC5000 series Process Control Stations.

LoopMaster
Model 53HC2600
Configuration Tools

The advanced configuration tools for the 53SL6000 series MicroMite controller.
## Model Number Breakdown

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Note: The DDE & OPC server functions provide unlimited access to the controller database regardless of the option selected for the Micro-DCI Global Database Access (GDBA) Database size.

## Computer Requirements

The minimum requirements for running the 53HC2600 software are:

**Windows™ NT 4.0 / 2000 Professional**
- Intel-based, Windows NT-compatible personal computer with a Pentium processor of 120 MHz Pentium or higher
- 48 MB RAM
- 100 MB free disk space
- CD ROM drive (software provided on CD)
- IBM AT Compatible 101 key keyboard
- Cursor pointing device such as a mouse or trackball
- Video board and monitor which will support VGA 1024 x 768 display (256-color display minimum)
- 1 - RS232 serial COM port available
- 1 - Parallel port for printing and hardware key installation
- Full size ISA bus slot required for each Supervisor card
- Microsoft Windows™ NT 4.0 Workstation or Windows™ 2000 Professional operating system