CS31
ARCNET
DDE Server

for Microsoft Windows
and InTouch Applications

User Manual
Ver 1.x Rev 1.2
DR 010 25

KLINKMANN AUTOMATION
P.O. Box 38
FIN-00371 Helsinki Finland
tel. int. + 358 9 5404940
fax int. + 358 9 5413541
www.klinkmann.com

Table Of Contents

CS31
ARCNET DDE Server

The CS31ARCN DDE Server is a Microsoft Windows program that acts as a DDE (Dynamic Data Exchange) *Server* and allows other Windows programs to access the data from ABB CS31 07KT93 Controllers. The CS31ARCN DDE *Server* requires a PC bus ARCNET adapter card (8 or 16 bit, e.g. ARCNET-PC130E Network Controller Board) based on the SMC ARCNET chip to communicate with ABB CS31 07KT93 Controllers. Through this high speed communications network the *Server* can directly access up to 8 ABB CS31 07KT93 Controllers.

Data from ABB CS31 07KT93 Controllers are accessed by commands for operator control and test functions used in communication through CS31 SYSTEM Bus (COM1 port of the Controller). In case of CS31ARCN Server communication these CS31 SYSTEM Bus ASCII telegrams are packed into ARCNET telegrams.

The CS31ARCN DDE Server can be used on MS Windows NT, where WinRT kernel driver is used to access the ARCNET adapter card. The *Server* is primarily intended for use with **Wonderware InTouch**, but it may be used by any Microsoft Windows NT program that is capable of acting as a DDE *Client.*

What is DDE?

DDE is a complete communication protocol designed by Microsoft to allow applications in the Windows environment to send/receive data and instructions to/from each other. It implements a *client-server* relationship between two concurrently running applications. The *server* application provides the data and accepts requests from any other application interested in its data. Requesting applications are called *clients*. Some applications such as **InTouch** and Excel can simultaneously be both a *client* and a *server.*

To obtain data from another application the *client* program opens a channel to the *server* application by specifying three things: the *server* ***application name***, the ***topic name*** and the specific ***item name***. For example, in the case of Excel, the application name is "Excel", the topic name is the name of the specific spreadsheet that contains the data and the item name is the specific cell on the spreadsheet. With **InTouch** the application name is "View", the topic name is the word "Tag name" when reading/writing to an **InTouch** tag name and the item name is a specific tag name in the **InTouch** Data Dictionary.

When a *client* application sets up a link to another DDE program, it requests the *server* application to *advise* the *client* whenever a specific item's value changes. These data links will remain active until either the *client* or *server* program terminates the link or the conversation. They are a very efficient means of exchanging data because once the link has been established no communication occurs until the specified data value changes. **InTouch** uses DDE to communicate with I/O device drivers and other DDE application programs.

Accessing a Remote DDE Item from CS31ARCN

The DDE protocol identifies an element of data by using a three-part address, including: ***Application***, ***Topic*** and ***Item.***

Application refers to the name of the Windows program (server) that knows how to access the data element. In the case of data coming from or going to ABB CS31 07KT93 hardware, the application portion of the DDE address is **CS31ARCN**.

Topic is an application-specific sub-group of data elements. The CS31ARCN Server considers each ABB CS31 07KT93 Controller to be a separate topic. The user creates a meaningful name for each Controller and uses this name as the topic name for DDE references.
Note: *In some cases, the term "node" is used interchangeably with the term "topic".*

Item indicates a specific data element within the specified topic. With the CS31ARCN Server, an item is an individual point in the ABB CS31 07KT93 Controller memory. (The item/point names are fixed by the CS31ARCN Server as described in the ***Item (Point) Naming*** section.)
Note: *In some cases, the term "point" is used interchangeably with the term "item".*

Installing the CS31ARCN DDE Server

Install and configure the ABB CS31 07KT93 hardware and ARCNET network according to the *Operating Manual "ABB Procontic CS31 Automation System in Decentralized Structure".* Install the appropriate ARCNET adapter card in the computer according to the *"Configuration Guide for ARCNET-PC130E/PC270E"*.

The CS31ARCN DDE Server installation package can be supplied:

1. As a self-extracting archive 01025xxx.EXE if downloaded from Klinkmann's web site (the xxx is the current (latest) version of the Server).
2. From installation on CD.
3. On two or three distribution disks (floppies).

To **install** the CS31ARCN DDE Server from the self-extracting archive, run the 01025xxx.EXE and proceed as directed by the CS31ARCN DDE Server Setup program.

To **install** the CS31ARCN DDE Server from CD or distribution disks (floppies), on MS Windows NT:

1. Insert the CD with Klinkmann Software into CD drive or insert CS31ARCN Disk1 into a floppy drive A: or B:.
2. Select the **Run** command under the **Start** menu.
3. Run STARTUP.EXE if installing from CD or SETUP.EXE if installing from distribution disks (floppies).
4. If installing from CD: select "Protocol Servers (DDE, SuiteLink, OPC)", find "CS31ARCN DDE Server and click on "Setup…".
5. Proceed as directed by the CS31ARCN DDE Server Setup program.

You will need to reboot the computer after installation.

When installation is finished, the subdirectory specified as a folder where to install the CS31ARCN DDE Server will contain the following files:

CS31ARCN.EXE The CS31ARCN Server Program. This is a Microsoft Windows 32-bit application program.

CS31ARCN.HLP The CS31ARCN Server Help file.

CS31ARCN.CFG An example configuration file.

LICENSE.TXT Klinkmann Automation software license file.

WWCOMDLG.DLL Dynamic Link Library necessary for CS31ARCN Server.

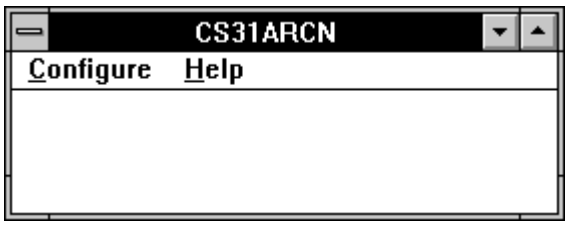
To **uninstall** the CS31ARCN Server, start Control Panel, select “Add/Remove Programs” and select the “CS31ARCN DDE Server” from the list of available software products. Click on “Add/Remove…” and proceed as directed by the UnInstallShield program.

Note:
The HASP key is needed for full time running of CS31ARCN Server. The HASP Driver setup is performed during the Server setup. Without HASP Driver installed, the CS31ARCN Server will run only 1 hour (with all features enabled).

Configuring the CS31ARCN Server

After the CS31ARCN Server is initially installed, a small amount of configuration is required. Configuring the Server automatically creates a **CS31ARCN.CFG** file which consists of all the topic (Controllers) definitions entered, as well as the communication port configurations. This file will be automatically placed in the same directory in which **CS31ARCN** is located unless the path where the configuration file will be placed is specified via the */Configure/Server Parameters* command.

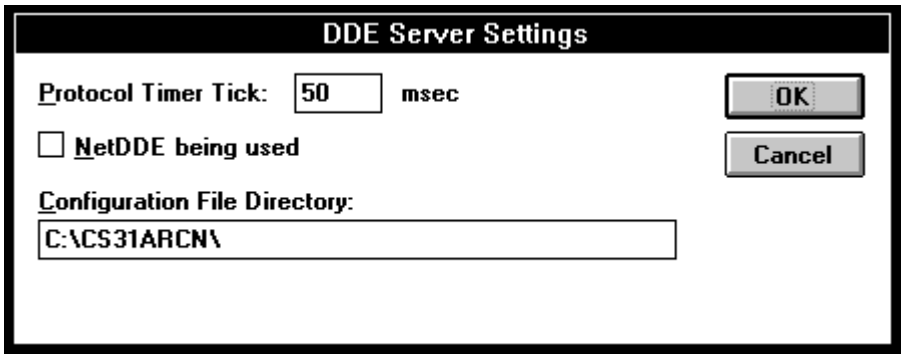
To perform the required configurations, start up the CS31ARCN program. If the Server starts up as an icon, double-click on the icon to open the appropriate window. The following will appear:



To access the commands used for the various configurations, open the */Configure* menu:

DDE Server Settings Command

A number of parameters that control the internal operations of the Server can be set. In most cases, the default settings for these parameters provide good performance and do not require changing. However, they can be changed to fine-tune Server for a specific environment.
To change the Server's internal parameters, invoke the **DDE Server Settings...** command. The "DDE Server Settings" dialog box will appear:



The following describes each field in this dialog box:

Configuration File Directory
The first field is used to specify the path (disk drive and directory) in which CS31ARCN will save its current configuration file. CS31ARCN will use this path to load the configuration file the next time it is started.
Note: *Only the "path" may be modified with this field. The configuration file is always named* ***CS31ARCN.CFG****.*
Note: *There is no limit to the number of configuration files created, although each must be in a separate directory. When using the CS31ARCN Server with* ***InTouch****, it is good practice to place the configuration file in the application directory.*

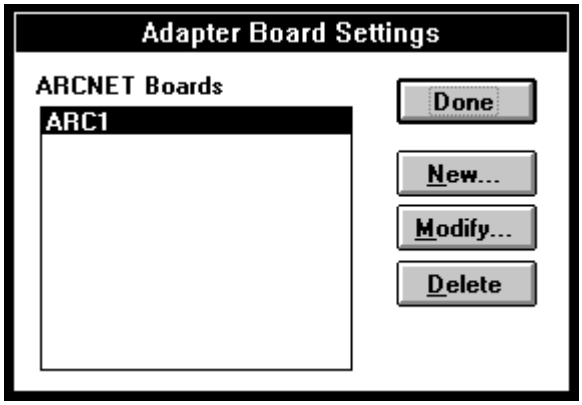
Protocol Timer Tick
This field is used to change the frequency at which the Server checks for data to process. This should be approximately 2 to 4 times faster than rate desired to update data from the ABB CS31 07KT93 hardware.

NetDDE being used
Select this option if you are in network using NetDDE.

When all entries have been made, click on **OK**.

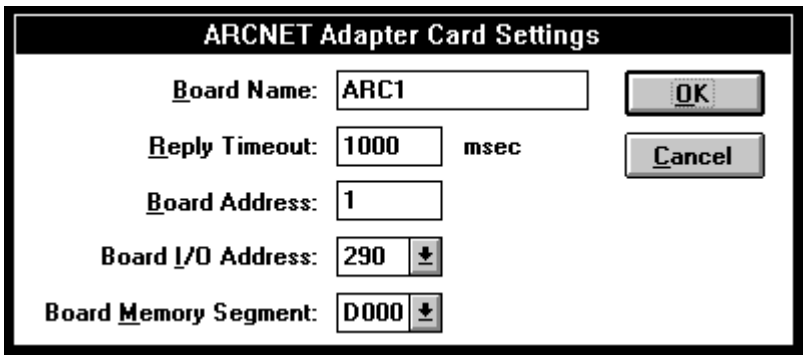
Board Configuration Command

To configure the ARCNET Network Board, invoke the **Board Configuration...** command. The "Adapter Board Settings" dialog box will appear:



Select the ARCNET Board and click on **Modify** to examine the characteristics of the selected Board.

The "ARCNET Adapter Card Settings" dialog box will appear:



The following describes each dialog field in this dialog box:

Board Name
This field is used to enter the ARCNET Board name.

Reply Timeout
This field is used to enter the amount of time (in milliseconds) that all Controllers using the selected communication port will be given to reply to the commands from the Server.
Note: *The default value of 1000 milliseconds should be sufficient for most configurations*.

Board Address
This field is used to enter the Board address consistent with the Board Station address selected on the ARCNET adapter card.

Board I/O Address
This field is used to enter the I/O base address, in hexadecimal, of the ARCNET interface. The Board I/O Address must be consistent with the base address selected on the ARCNET adapter card. To select a necessary Board I/O Address click on the combo box button and make your choice from the list box. Care should be taken selecting a base address which will not conflict with other devices in the system.
Note: *The default Board I/O Address is 2E0.*

Board Memory Segment
This field is used to enter the segment address, in hexadecimal, for the ARCNET chip buffers. The Board Memory Segment address must be consistent with the base memory (RAM) buffer address selected on the ARCNET adapter card. To select the necessary Board Memory Segment click on the combo box button and make your choice from the list box.
Note: *The default Board Memory Segment address is D000.*

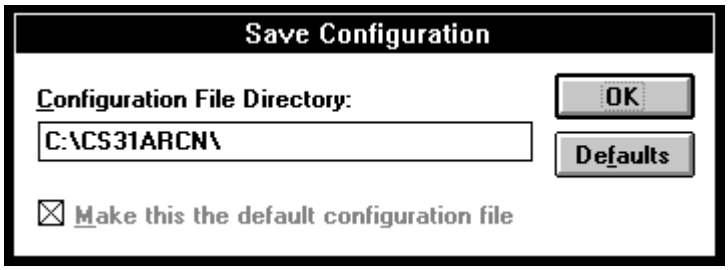
When all entries have been made, select **OK** to process the configuration for the ARCNET board.

Select **DONE** in the "Adapter Board Settings" dialog box when all ARCNET boards have been configured.

Note: *If you are using **Windows NT** version of CS31ARCN DDE Server you will need to reboot the computer to activate board settings if you added new ARCNET boards, removed existing ones or changed "Board I/O Address", or "Board Memory Segment" for existing ARCNET boards.*

Saving CS31ARCN Configuration File

If the configuration file does not currently exist, or a new configuration path has been specified, the Server will display the "Save Configuration" dialog box:



This dialog box displays the path where the Server is going to save the current configuration file. The path may be changed if necessary. Also, the path can optionally be recorded in the **WIN.INI** file by selecting the **"Make this the default configuration file"** option. Doing so will allow the CS31ARCN Server to find the configuration file automatically each time it is started.

Configuration File Location

When the CS31ARCN Server starts up, it first attempts to locate its configuration file by, first checking the **WIN.INI** file for a path which was previously specified. If the path is not present in the **WIN.INI** file, the Server will assume that the current working directory is to be used.

To start the Server from an application directory configuration file other than the default configuration file a special switch **(/d:)** is used. For example, invoke the **File/Run** command from the **File Manager** or **Program Manager** and enter the following:

CS31ARCN /d:c:\directoryname

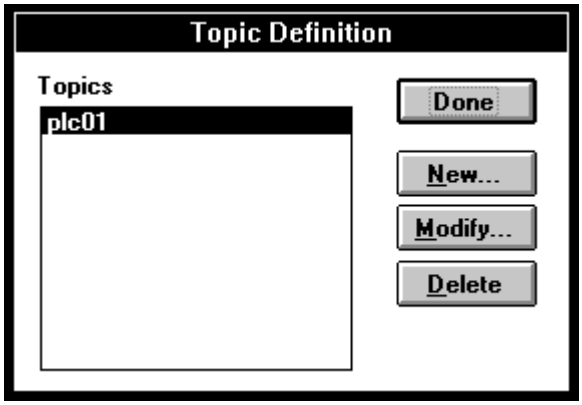
Note: *There is no limit to the number of configuration files that may be created, although each must be in a separate directory.*

Topic Definition Command

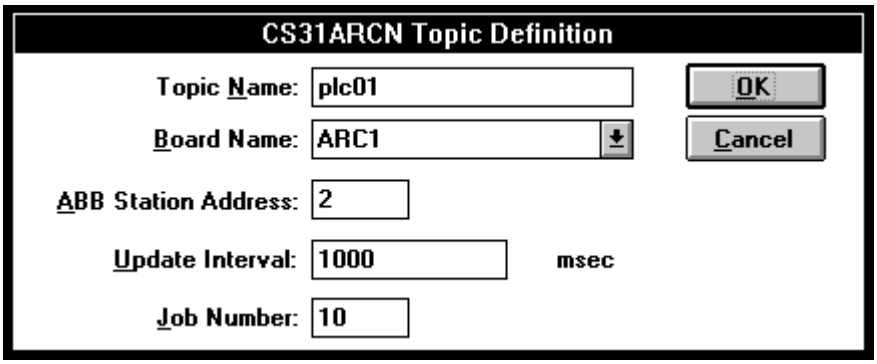
The user provides each Controller with an arbitrary name which is used as the DDE topic for all references to the Controller.

The following steps are taken to define the Topics (Controllers) attached to the network:

1. Invoke the **Topic Definition...** command. The "Topic Definition" dialog box will appear:



2. To modify an existing topic, select the topic name and click on **Modify**. To define a new topic, click on **New**. The "CS31ARCN DDE Topic Definition " dialog box will appear:



3. Enter the **Topic Name** which corresponds to the DDE Topic Name. (The DDE Topic Name is entered in the "DDE Access Name Definition" dialog box described in the **Using the CS31ARCN Server with InTouch** section.)

4. Click on the **Board Name** combo box to associate an ARCNET Network Controller Board with the topic. (Additional topics may be associated with the same ARCNET Board later.)
   Note: *If this is the first time an ARCNET Board has been configured, the user will be prompted to save it to an existing directory.*

5. Enter the value in the **ABB Station Address** field. (Refer to the ABB CS31 Operational Manual for the correct address setting.)
   Note: *Each Controller must have a unique non-zero address.*

6. Set the **Update Interval** field to indicate the frequency the items/points on this topic will be read (polled).

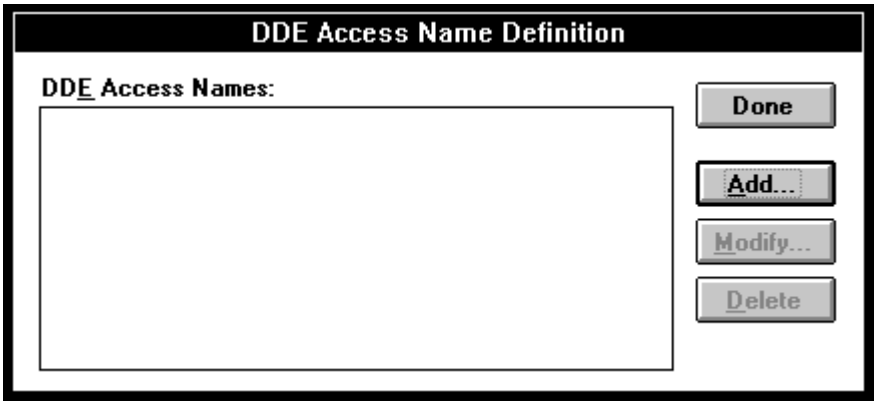
7. Set the **Job Number** of the correspondent data package used in ARCNET communication with the Controller.

When all entries have been made, select **OK** to process the configuration for the Topic.

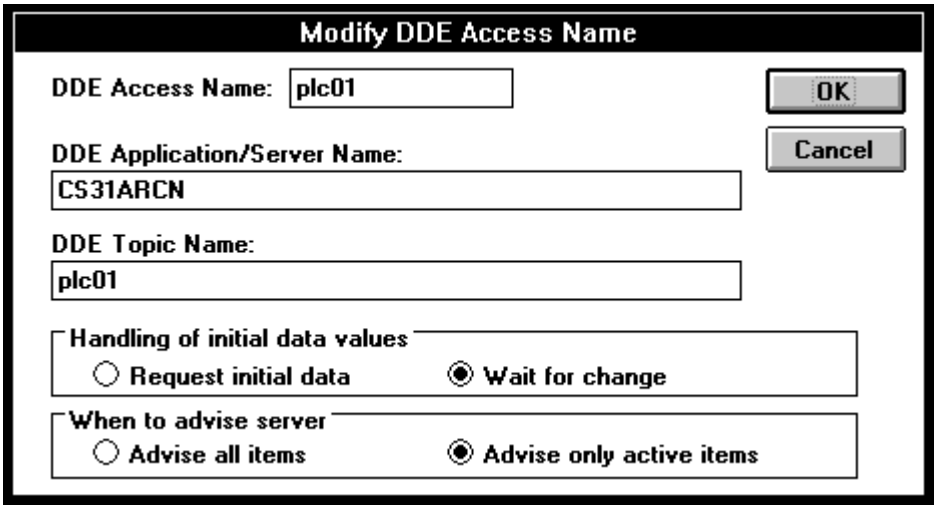
Using the CS31ARCN Server with InTouch

To access items/points on ABB CS31 07KT93 Controllers from **InTouch**, the following steps (all performed in **WindowMaker**) are required:

To define the DDE Access Names in WindowMaker for each Controller invoke the */Special/DDE Access Names...* command. The "DDE Access Name Definition" dialog box will appear.



Click on **Add**. The "Modify DDE Access Name" Dialog Box will appear:



***Note:** If **Add** is selected, this dialog box will be blank when it initially appears. Data has been entered here to illustrate the entries which are made.*

The following three fields are required entries when entering a DDE Access Name Definition:

DDE Access Name
Enter an arbitrary name which will be used by **InTouch** to refer to the topic (Controller). It is recommended that the name defined for the topic (Controller) in CS31ARCN is also used here.)

DDE Application/Server Name
Enter the application name, **CS31ARCN**, which the DDE Server has used for accessing the Controller.

DDE Topic Name
Enter the name defined for the topic in CS31ARCN to identify the Controller that the CS31ARCN Server will be accessing.
Note: *This will usually be the same as the "DDE Access Name", although, if desired, they may be different. However, it must be the same name used when the topics were configured in section* ***Configuring the CS31ARCN Server.***

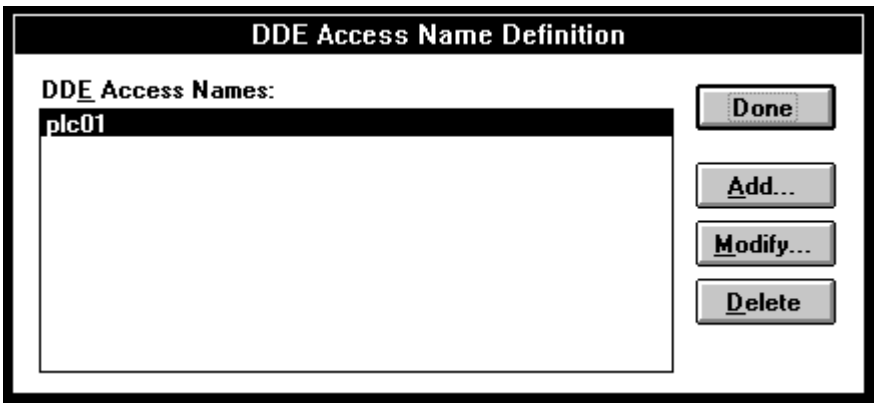
Request Initial Data
This option may be selected if the Server is other than a Wonderware DDE Server **and** the Server does not return data values immediately when a window is displayed. This option is not applicable to the CS31ARCN DDE Server.

Wait for Change
This option should be selected for the CS31ARCN DDE Server.

Advise all Items
This option may be selected if the Server is to poll for all data whether or not it is in visible windows, alarmed, logged or trended. Using the option is not recommended.

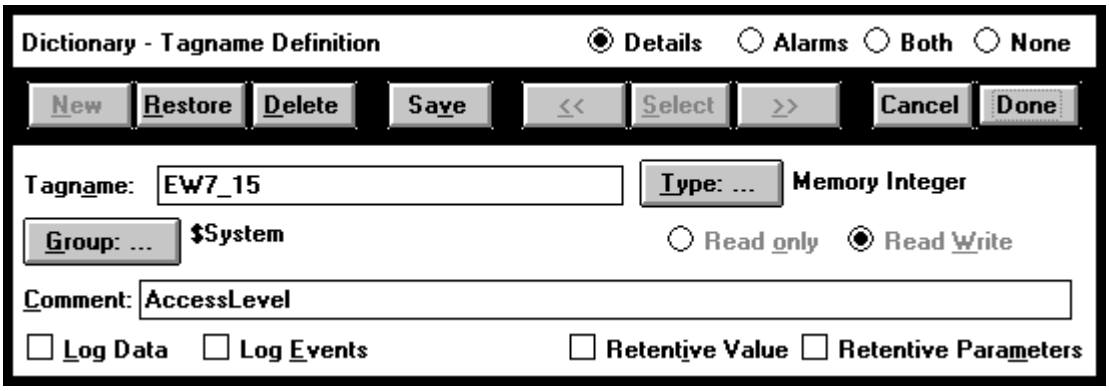
Advise only active Items
Selecting this option will cause the CS31ARCN Server to poll only points in visible windows and points that are alarmed, logged or trended.

When all entries have been made, select **OK** and click on **Done** in the "DDE Access Name Definition" dialog box.



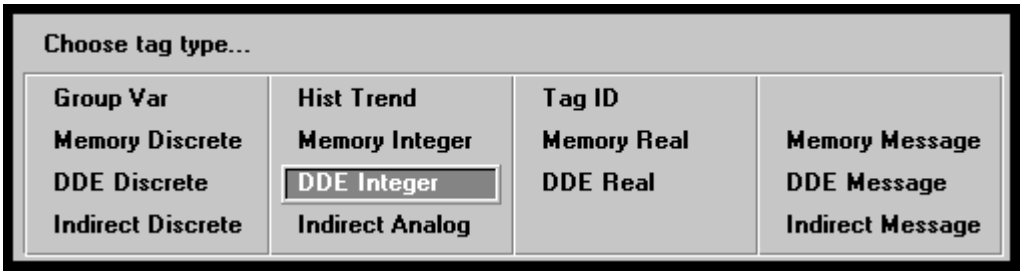
Defining the Tag names

To define the Tag names associated with the new "DDE Access Name", invoke the */Special/Tagname Dictionary* command (in **WindowMaker**) then click on **New**. The "Dictionary - Tagname Definition" dialog box will appear:



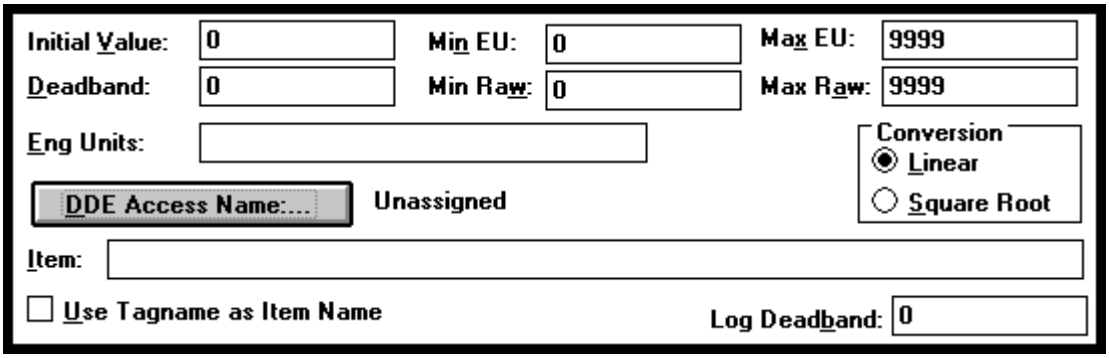
Enter the **Tag Name**. (The tag name defined here is the name **InTouch** will use. The CS31ARCN Server does not see this name.)

Select the tag type by clicking on the **Type** button. The "Choose tag type" dialog box will appear:

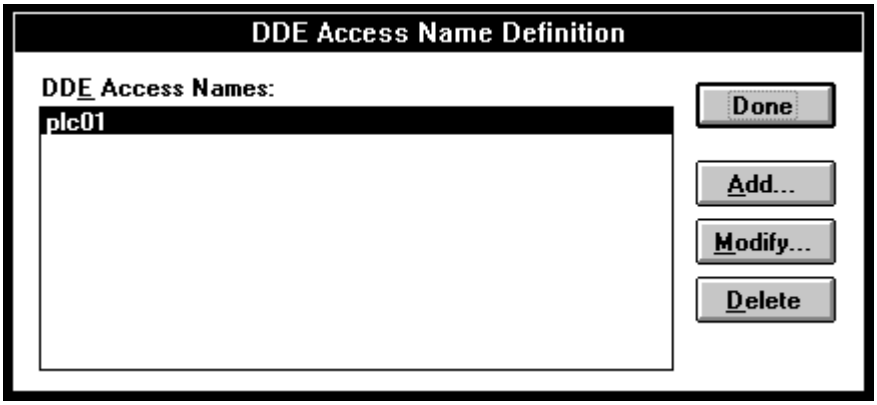


To access CS31ARCN items , the type must be **DDE Discrete** or **DDE Integer.** Select the DDE type.

The "Details" dialog box for the tag name will appear:



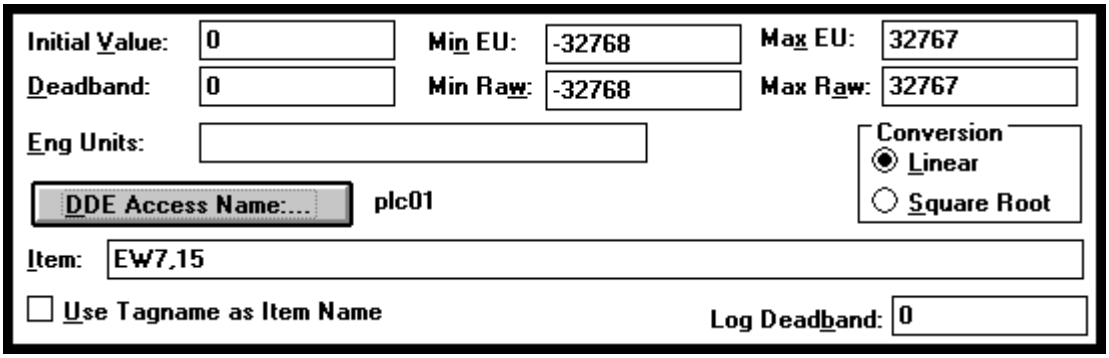
Select the CS31ARCN topic (Controller) by clicking on the **DDE Access Name**... button. The "DDE Access Name Definition" dialog box will appear:



Select the appropriate topic name and click on **Done**. (If the DDE Access Name has not been defined as previously described, click on **Add** and define the DDE topic now.)

For integers fill in the **Min EU**, **Max EU**, **Min Raw** and **Max Raw** fields. These fields control the range of values which will be accepted from the Server as well as the way the values are scaled. If no scaling is desired, **Min EU** should be equal to **Min Raw** and **Max EU** should be equal to **Max Raw**.

Enter the CS31ARCN item/point name to be associated with this tag name in the **Item** field in the "Details" box:



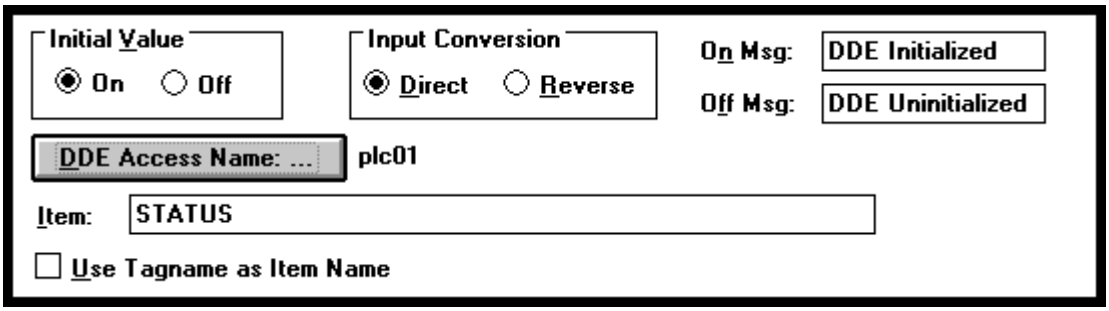
(Refer to the **Item (Point) Naming** section below for complete details.)

Where applicable, the **Use Tagname as Item Name** option may be selected to enter automatically the tag name in this field. ***Note:*** *The tag name can only be used if it follows the conventions listed in the* ***Item (Point) Naming*** *section.*
When all entries have been made, click on the **Done** button (in the top dialog box) to accept the new tag name. To define additional Tag names click on the **New** button.

Controller "STATUS" Item

For each Controller, there is a built-in discrete item which indicates the state of communication with the Controller. The discrete item (**Status**) is set to **0** when communication with the Controller fails and set to **1** when communication is successful.

From **InTouch** the state of communication with the Controller may be read by defining a DDE Discrete tag name and associating it with the topic configured for the Controller and using **Status** as the *Item* name.



From Excel, the status of the communications may be read by entering the following formula in a cell:

=CS31ARCN|topic!STATUS

Item (Point) Naming

Within the CS31ARCN Server, item/point naming depends on ABB Procontic CS31 system operand naming conventions. All Item/point names (except special Items **STATUS** and **FORCR**) generally may be described as:

FNg,c:b

where **F** - optionally used prefix (character F or f) for forced Item indication;
N - one or two character identifying the name of Item;
g - Group number of the PLC device address;
c - Channel number of the PLC device address;
b - Bit number for Items representing Bits of Word Items.

The tables below list the Item/point names supported by the CS31ARCN DDE Server:

BINARY points

Item name	Description	DDE Tag Type	Range
E	BINARY input	Discrete	E00,00...E63,15
A	BINARY output	Discrete	A00,00...A63,15
M	BINARY flag	Discrete	M00,00...M255,15
S	BINARY step	Discrete	S00,00...S127,15
K	BINARY Indirect constant	Discrete	K00,00...K00,01

WORD&DOUBLE points

Item name	Description	DDE Tag Type	Range
EW	WORD input	Integer*	EW00,00...EW07,15
AW	WORD output	Integer*	AW00,00...AW6,15
MW	WORD flag	Integer*	MW00,00...MW255,15
KW	WORD Indirect constant	Integer*	KW00,00...KW39,15
MD	DOUBLE WORD flag	Integer	MD00,00...MD31,15
KD	DOUBLE WORD indirect constant	Integer	KD00,00...KD07,15

*) The CS31ARCN Server supports *DDE Discrete* Items representing bits of words EW, AW, MW and KW. For example, Item MW3,12:13 represents Bit number 13 of flag Word Group number 3, Channel number 12. These bit Items are *Read Only*.

Most commonly item/point names are used without prefixes. Prefix "**F**" may be used for BINARY Inputs, WORD Inputs, BINARY Outputs and WORD Outputs and means, that point is forced. Forced points are only written to PLC and no polling is performed for them.

FORCED points

Item name	Description	DDE Tag Type	Range
FE	FORCED BINARY input	Discrete	E00,00...E63,15
FA	FORCED BINARY output	Discrete	A00,00...A63,15
FEW	FORCED WORD input	Integer	EW00,00...EW07,15
FAW	FORCED WORD output	Integer	AW00,00...AW6,15

These force values apply until an application sets value of DDE Discrete Item **FORCR** to 1.
Maximum number of I/O Items to be forced into one controller are the follows:
Binary inputs - 64;
Word inputs - 16;
Binary outputs - 64;
Word outputs - 16.
If the limit is exceeded by an application it must change the value of **FORCR** Item to 1 before performing further forced writes. It is recommended to write value 1 into FORCR Item for every controller after Server's startup because the Server can not recognize previously forced (performed by other means) Item numbers and will try to force more Items than it is allowed.

Items/points E, A, S, EW and AW are Read Only.

It is recommended that you use consecutive addressing for item/point naming (for example, MW001,01, MW001,02, MW001,03, etc.). This will greatly increase the performance of CS31ARCN DDE Server.

Item/Point Naming Examples

The following examples show the correct format for item/point names:

- E01,15 BINARY Input (CS31 bus), Group number 1, Channel number 15;
- A03,00 BINARY Output, Group number 3, Channel number 0;
- M113,13 BINARY Flag, Group number 113, Channel number 13;
- K00,00 BINARY Constant, Group number 0, Channel number 0;
- EW02,01 Analog WORD Input, Group number 2, Channel number 1;
- AW03,02 Analog WORD Output, Group number 3, Channel number 2;
- MW255,11 WORD Flag, Group number 255, Channel number 11;
- KW38,04 WORD Constant, Group number 38, Channel number 4;
- KW38,04:6 Bit number 6 of WORD Constant, Group number 38, Channel number 4;
- FE62,04 Forced BINARY Input, Group number 62, Channel number 4.

Notes on Using Microsoft Excel

Data from CS31ARCN topics (Controllers) may be accessed from Excel spreadsheets. To do so, enter a formula like the following into a cell on the spreadsheet.

=CS31ARCN|topic!item

Sometimes, Excel requires the **topic** and/or **item** to be surrounded by apostrophes.

In the formula, **topic** must be replaced with one of the valid topic names defined during the Server configuration process. Replace **item** with one of the valid item names described in the ***Item (Point) Naming*** section.

Reading Values into Excel Spreadsheets

Values may be read directly into Excel spreadsheets by entering a DDE formatted formula into a cell, as shown in the following examples:

=CS31ARCN|'topic-31'!'A62,0'
=CS31ARCN|'rack5'!'MW1,1'
=CS31ARCN|'tank-2'!'E62,2'

Note: *Refer to the Microsoft Excel manual for complete details on entering Remote Reference formulas for cells.*

Writing Values to CS31ARCN Points

Values may be written to the Server from Microsoft Excel by creating an Excel macro that uses the **POKE** command. The proper command is entered in Excel as follows:

channel=INITIATE("CS31ARCN","topicname")
=POKE(channel,"itemname", Data_Reference)
=TERMINATE (channel)
=RETURN()

The following describes each of the above **POKE** macro statements:

channel=INITIATE("CS31ARCN","topicname")
Opens a channel to a specific topic name (defined in the Server) in an application with name CS31ARCN (the executable name less the .EXE) and assigns the number of that opened channel to **channel.**

Note: *By using the* ***channel=INITIATE*** *statement the word* ***channel*** *must be used in the* ***=POKE*** *statement instead of the actual cell reference. The* ***"applicationname"*** *and* ***"topicname"*** *portions of the formula must be enclosed in quotation marks.*

=POKE(channel,"itemname", Data_Reference)
POKEs the value contained in the **Data_Reference** to the specified item name (actual location in the ABB CS31 PLC) via the **channel** number returned by the previously executed **INITIATE** function. **Data_Reference** is the row/column ID of the cell containing the data value. For **"itemname"**, use some of the valid item names described in the ***Item (Point) Naming*** section.

=TERMINATE(channel)
Closes the channel at the end of the macro. Some applications have a limited number of channels. Therefore they should be closed when finished. **Channel** is the channel number returned by the previously executed **INITIATE** function.

=RETURN()
Marks the end of the macro.

The following is an example of Excel macro used to poke value from cell B2 to topic **PLC1** item **MW1,1**:

```
PokeMacro -Ctrl a
=INITIATE("CS31ARCN","PLC1")
=POKE(A2,"MW1,1",B2)
=ON.TIME(NOW()+0.01,"TerminateDDEChannel")
=RETURN()

TerminateDDEChannel
=TERMINATE(A2)
=RETURN()
```

Note: R*efer to the Microsoft Excel manual for complete details on entering Remote Reference formulas for cells.*

Troubleshooting

WIN.INI entries

The first time you run the CS31ARCN DDE Server configuration, most of the items in the following list will automatically appear in the WIN.INI file. It is usually in the C:\WINDOWS directory. It is an ASCII file and can be altered manually if you wish with any text editor, e.g. MS Windows Notepad (*do not use a program that formats text, such as MS Word or Write unless the file is saved as DOS text*). The following is a typical entry for the CS31ARCN DDE Server:

```
 [CS31ARCN]
ProtocolTimer=50
RequestTimer=1000
ValidDataTimeout=60000
DDEBlockSize=4096
WriteRetryIndefinitely=0
ConfigurationFile=C:\CS31ARCN\
WinIconic=0
WinFullScreen=0
WinTop=112
WinLeft=0
WinWidth=200
```

WinHeight=168
ShowSend=0
ShowReceive=0
ShowErrors=1

Usually any change in Item/point value command is packed into a separate ARCNET telegram. To improve Server performance one ARCNET telegram includes CS31 commands of writing values of several Items or commands for consecutively changing of value of the same Item. The following items in WIN.INI file set the greatest number of writing commands in a separate ARCNET telegram and greatest number of writing commands for the same Item:
MaxItemWritesInMsg=5
MaxSameItemWritesInMsg=5
Valid numbers for **MaxItemWritesInMsg** and **MaxSameItemWritesInMsg** are 1...10, default value is 1. If you set values greater than 1 check the Server performance and reduce values if communication is not good.

MaxPackagesInResponse=4
The Server can access up to 99 DDE Item values by one reed data telegram. If such amount of response data can not be encluded in one response telegram the PLC sends several consequtive response telegrams to one request telegram. The Server requests PLC data so that a response to any message does not need more telegrams than set in MaxPackagesInResponse item. Valid values of MaxPackagesInResponse are 1...4.
Note*: If value greater than 1 is set in MaxPackagesInResponse the debugging choice* ***Show Receive*** *(see chapter Troubleshooting/Troubleshooting menu) regards only to the first telegram of response.*

Troubleshooting menu

The following debugging choices are appended to the Server's System Menu (the menu that appears when you click on the "-" box in the upper left hand corner of the Server window):

Suspend Protocol / Resume Protocol - these choices permit you to turn protocol processing on and off, what means that you can suspend access to the GP.

Show Send	- if checked then all outgoing user data is displayed in ASCII/hexadecimal format.
Show Receive	- if checked then incoming user data is displayed in ASCII/hexadecimal format. ***Note****: To see* ***all*** *incoming data the item* ***MaxPackagesInResponse*** *value in WIN.INI file must be 1 (see chapter Troubleshooting/WIN.INI entries).*
Show Errors	- if checked then information about errors is displayed.
Verbose	- if checked then all information about errors is displayed.
Dump	- displays all information about board, active topics and data items.

All debug is displayed via the Wonderware Logger, which must be active for these commands to work.
Warning: if you check **Show Send** and/or **Show Receive** debug output grows very fast.

KLINKMANN AUTOMATION
CS31ARCN DDE Server
Revision History

Apr 96	Rev 1.0	First Release
Aug 97	Rev 1.1	Manual text modified. Manual file name changed.
Mar 2002	Rev 1.9	Installation from CD information added.