

INTERBUS DDE Server for IBS PC ISA SC/I-T

for Microsoft Windows
and InTouch Applications

**User Manual
Ver 1.x Rev 1.5
DR 260 10**

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

What is DDE?	1
Accessing a Remote DDE Item from Server.....	2
Getting Started Quickly with the Server	3
Installing the Server.....	3
Creating Board Parameterization File	5
Configuring the Server	5
Configure DDE Server Settings Command	5
Board Configuration Command	6
Saving Server Configuration File	7
Configuration File Location	8
Topic Definition Command	8
Using the Server with InTouch.....	10
Defining the Tagnames	11
Topic "STATUS" Item.....	13
Item/Point Naming	14
Notes on Using Microsoft Excel	16
Reading Values into Excel Spreadsheets	16
Writing Values to IBS_SC Points	16
Error Messages	18
Troubleshooting.....	20

INTERBUS DDE Server

The INTERBUS DDE Server for IBS PC ISA SC/I-T controller board (hereafter referred to as the "INTERBUS DDE Server" or "Server") is a Microsoft Windows NT application program, that acts as a DDE (Dynamic Data Exchange) Server and allows other Windows application programs (clients) to access input/output data from INTERBUS devices.

The Server communicates with INTERBUS devices via the IBS PC ISA SC/I-T controller board, installed in an IBM-compatible PC. The Server uses Device Driver Interface functions, supplied by Phoenix Contact, to access controller board via Process Data Interface. Up to 512 devices with 4096 I/O points can be accessed.

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 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 "Tagname" when reading/writing to an InTouch tagname and the item name is a specific tagname in the InTouch Data Dictionary.

When a DDE client application sets up a link to the DDE server application, it requests the server 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 when the link has been established, no communication occurs until the specified data value changes.

Accessing a Remote DDE Item from Server

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. For this Server, the application part of the DDE address is **IBS_SC.**

Topic is an application-specific sub-group of data elements. The user creates a meaningful name for each of them and use this name as the topic name for DDE references. Topics can have different data update time. However, as in this case, the total process data amount is comparatively small and all current process data on IBS PC ISA SC/I-T controller board are instantly available for the Server, use of only one topic is recommended for this Server.

Item indicates a specific data element within the specified topic. For the Server, an item is an individual data bit, byte, word, double word from the process data (the item/point naming is described in the **Item/Point Naming** section of this manual).

Note: *In some cases, the term "point" is used interchangeably with the term "item".*

Getting Started Quickly with the Server

It is assumed, that IBS PC ISA SC/I-T controller board, controller board driver, IBS CMD SWT G4 and DDE Client (e.g. InTouch) are already installed as described in the respective documentation.

Follow these steps:

1. Install the Server.
2. Create IBS PC SC/I-T controller board parameterization file IBS_SC_1.SVC with IBS CMD SWT G4 tool.
3. Start and configure Server.
4. Start DDE Client.

Installing the Server

The INTERBUS DDE Server installation package can be supplied:

1. As a self-extracting archive 26010xxx.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 INTERBUS DDE Server from the self-extracting archive, run the 26010xxx.EXE and proceed as directed by the INTERBUS DDE Server Setup program.

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

1. Insert the CD with Klinkmann Software into CD drive or insert INTERBUS DDE 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 "INTERBUS DDE Server" and click on "Setup...".
5. Proceed as directed by the INTERBUS DDE Server Setup program.

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

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

IBS_SC.HLP	The IBS_SC Server Help file.
IBS_SC.CFG	An example configuration file.
LICENSE.TXT	Klinkmann Automation software license file.
WWCOMDLG.DLL	Dynamic Link Library necessary for IBS_SC Server.
ADDITION.ZIP	Contains additional files (InTouch application examples etc.). For detailed information, how to use these files, read the README.TXT file included.

To **uninstall** the IBS_SC Server, start Control Panel, select “Add/Remove Programs” and select the “IBS_SC 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 IBS_SC Server. The HASP Driver setup is performed during the Server setup. Without HASP Driver installed, the IBS_SC Server will run only 1 hour (with all features enabled).

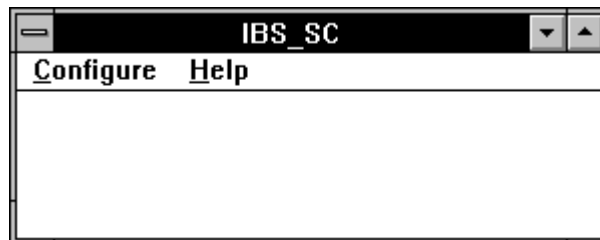
Creating Board Parameterization File

Start IBS CMD SWT G4 tool. Read in connected bus configuration as described in IBS CMD SWT G4 Help. Default Process Data Description and Process Data Reference List will also be created automatically. Save board parameterization data in IBS_SC_1.SVC file, located in the same directory, as the Server configuration file IBS_SC.CFG (saving data in ASCII (*.SVC) file is described in IBS CMD SWT G4 Help).

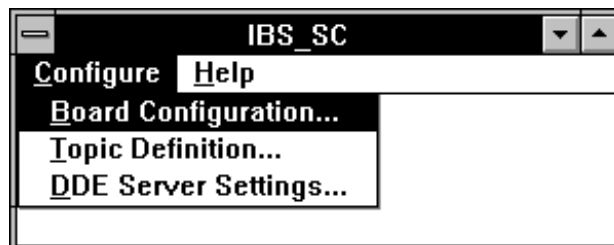
Configuring the Server

After the Server is initially installed, some configuration is required. During configuration Server creates a IBS_SC.CFG file, which contains all entered topic definitions, as well as some board settings. This file will automatically be placed in the same directory as IBS_SC.EXE, unless the path where the configuration file must be placed is specified via the */Configure/DDE Server Settings* command.

To perform the required configuration, start the IBS_SC.EXE program. IBS_SC main window will appear:

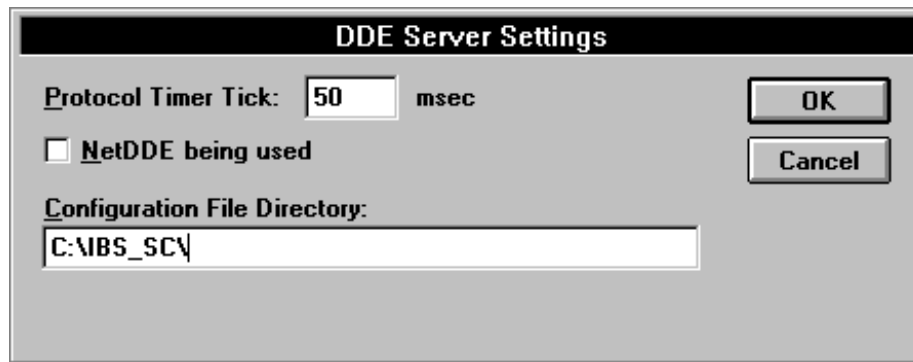


To access the commands used for configuration, open the */Configure* menu:



Configure DDE Server Settings Command

To change Server's internal parameters, invoke the */Configure/DDE Server Settings* command. The **DDE Server Settings** dialog box will appear:



The following describes each field in this dialog box:

Protocol Timer Tick

This field is used to set the frequency at which the Server checks for work to do. The minimum value is 50 milliseconds for Windows 3.x and 10 milliseconds for Windows NT.

NetDDE being used

Select this option if you are networking using NetDDE.

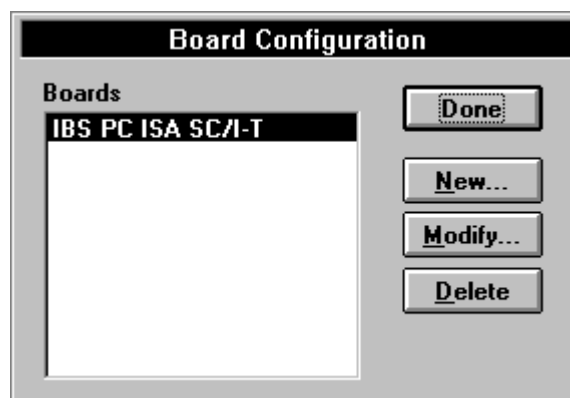
Configuration File Directory

This field is used to specify the path (disk drive and directory) in which Server will save its current configuration file. Server will use this path to load the configuration file the next time it is started.

Note: Only the path may be modified in this field. The configuration file is always named **IBS_SC.CFG**. There is no limit to the number of configuration files created, although each must be in a separate directory. When using the Server with **InTouch**, it is a good practice to place the configuration file in the application directory.

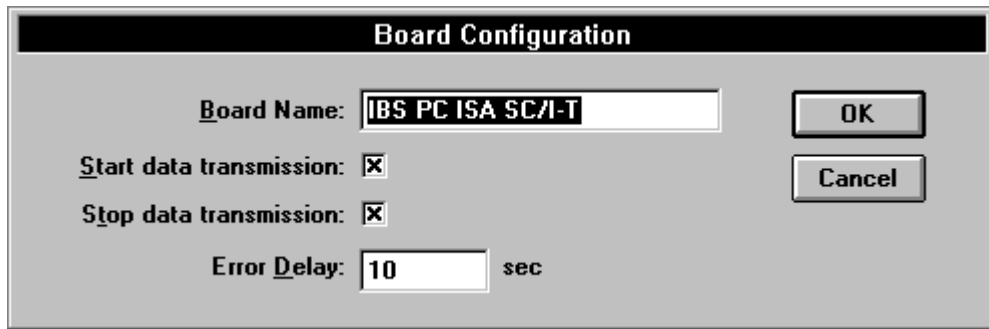
Board Configuration Command

This command is used to set some board-related parameters, required by the Server. Invoke the `/Configure/Board Configuration` command. A list of configured boards will appear (only one board is supported in this Server version):



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

The **Board Configuration** dialog box will appear:



The following describes each field in this dialog box:

Board Name

This field is used to enter the board name.

Start data transmission

Server will load controller board parameterization file IBS_SC_1.SVC, created with IBS CMD SWT G4 tool, to controller board and start data transmission between controller board and INTERBUS devices, when first request from DDE Client is received. If this check box is not set, data transmission must be already started (for example, started from IBS CMD SWT G4 tool).

Stop data transmission

Server will stop data transmission between controller board and INTERBUS devices, when there are no more data requests from DDE Clients. If this check box is not set, data transmission between controller board and INTERBUS devices will be continued even if all DDE Clients and Server are closed. It may be convenient if IBS CMD SWT G4 tool is used parallelly with Server or if controller board is performing data pre-processing, which must not be stopped.

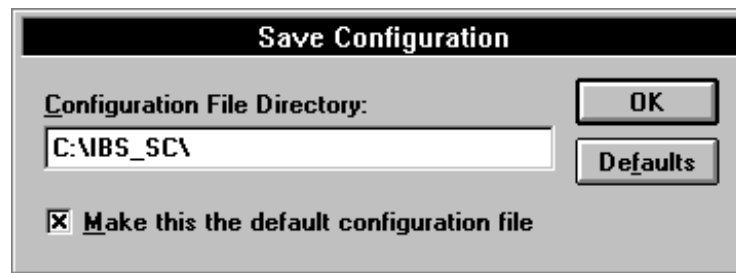
Note: Server has no “read” access to output data on controller board. It has its own output data image, created from output values received from the DDE Client. Therefore, if controller board performs data pre-processing and sets its own output values, these values cannot be read by the Server, and may be overwritten by the Server.

Error Delay

Defines time interval after which Server will try to resume communication, stopped by error.

Saving Server Configuration File

If the configuration file does not 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** option. Doing so it will allow the Server to find the configuration file automatically each time it is started.

Configuration File Location

When the 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, with configuration file other than the default configuration file, a special switch (**/d:**) is used. For example, invoke the **File/Run** command and enter the following command:

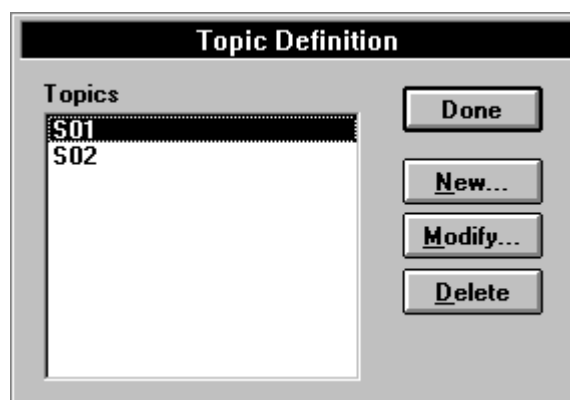
IBS_SC /d:c:\path

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

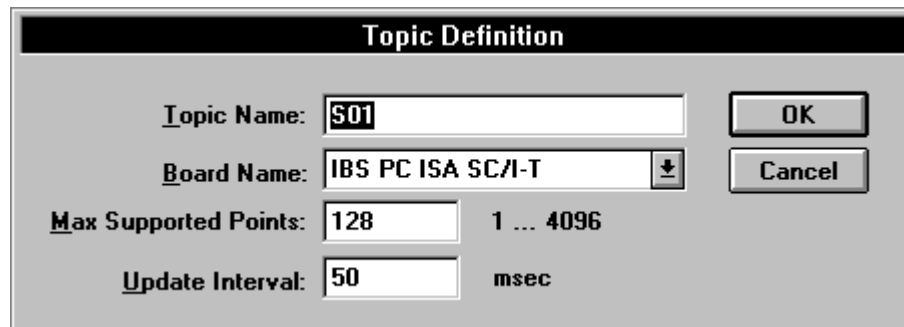
Topic Definition Command

The following steps are taken to define the Topics:

1. Invoke the `/Configure/Topic Definition` command. The list of configured topics will appear:



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



The screenshot shows a dialog box titled "Topic Definition". It contains the following fields and controls:

- Topic Name:** A text input field containing "S01".
- Board Name:** A dropdown menu showing "IBS PC ISA SC/I-T" with a downward arrow.
- Max Supported Points:** A text input field containing "128", with a range indicator "1 ... 4096" to its right.
- Update Interval:** A text input field containing "50", with the unit "msec" to its right.
- Buttons:** "OK" and "Cancel" buttons are located on the right side of the dialog.

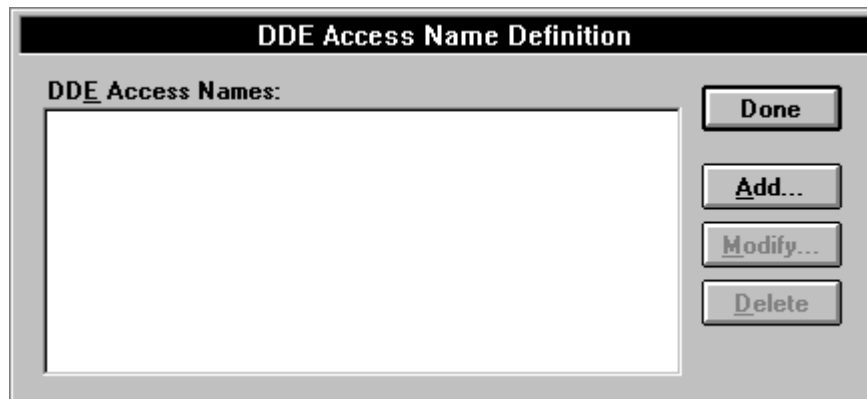
- Enter **Topic Name** which corresponds to the DDE Topic Name. (The DDE Topic Name is entered in the **Add DDE Access Name** dialog box described in the **Using the Server with InTouch** section).
- Select board from **Board Name** list (only one board is supported in this Server version).
- Set **Maximum Supported Points** for topic. Set this value equal to number of actually used (polled) items/points - this will reduce the amount of memory used by the Server.
- Set **Update Interval**, to indicate the frequency the items/points on this topic will be read (polled).

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

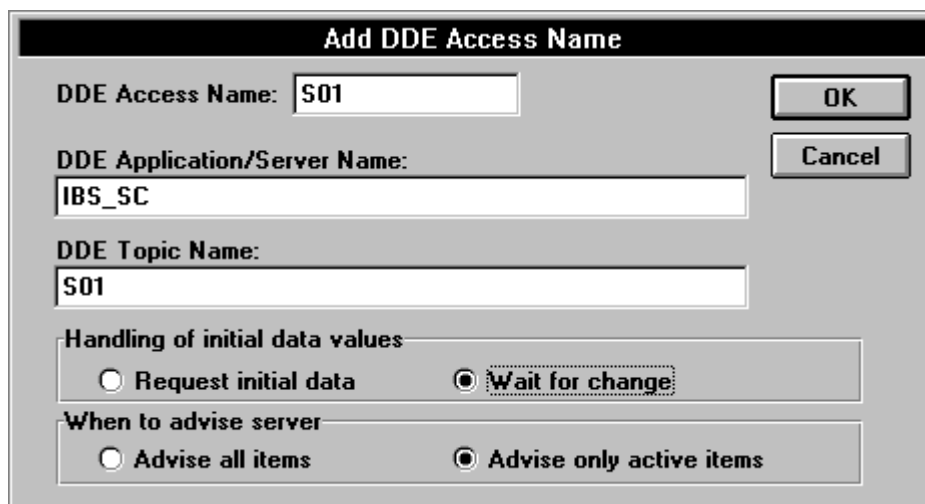
Using the Server with InTouch

To access input/output data from **InTouch**, the following steps (all performed in **WindowMaker**) are required:

To define the DDE Access Names in WindowMaker, invoke the */Special/DDE Access Names* command. The **DDE Access Name Definition** dialog box will appear:



Click on **Add**. The **Add 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 adding a DDE Access Name:

DDE Access Name

Enter an arbitrary name which will be used by **InTouch** to refer to the topic. For simplicity, it is recommended that the name defined for the topic in Server is also used here.

DDE Application/Server Name

Enter Server name **IBS_SC**.

DDE Topic Name

Enter one of topic names defined during Server configuration.

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 this Server.

Wait for Change

This option should be selected when the DDE application is a Wonderware DDE Server. Select it for this Server.

Advise all Items

This option may be selected if the Server is to poll for all data, regardless whether data are in visible windows, alarmed, logged or trended. The use of the option is not recommended.

Advise only active Items

Selecting this option will cause the Server to poll only items in visible windows and items that are alarmed, logged or trended.

Defining the Tagnames

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

Click on **New** and enter the **Tag Name**. (The tagname defined here is the name **InTouch** will use. The Server will not use this name.)

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

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

The **Details** dialog box for the tagname will appear:

Select the Server topic 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.)

The **Details** dialog box will appear displaying the selected **DDE Access Name**:

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 and how 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 Server item/point name to be associated with this tagname in the **Item** field in the **Details** dialog box:

The 'Details' dialog box contains the following fields and controls:

- Initial Value:** 0
- Min EU:** 0
- Max EU:** 65535
- Deadband:** 0
- Min Raw:** 0
- Max Raw:** 65535
- Eng Units:** (empty text field)
- Conversion:** Radio buttons for **Linear** (selected) and **Square Root**.
- DDE Access Name:** S01
- Item:** IW0
- Use Tagname as Item Name**
- Log Deadband:** 0

Refer to the **Item/Point Naming** section below for details.

When all entries have been made, click on the **Save** button (in the top dialog box) to accept the new tagname. To define additional tagnames, click on the **New** button. To return to the **WindowMaker** main screen, select **Done**.

Topic "STATUS" Item

For each DDE Topic, there is a built-in discrete item which indicates the state of communication for the topic. The discrete item (**STATUS**) is set to **0**, when communication fails, and set to **1**, when communication is successful.

From **InTouch** the state of communication may be read by defining a DDE Discrete tagname and associating it with the topic and using **STATUS** as the item name.

The 'Details' dialog box for a DDE Discrete item contains the following fields and controls:

- Initial Value:** Radio buttons for **On** and **Off** (selected).
- Input Conversion:** Radio buttons for **Direct** (selected) and **Reverse**.
- On Msg:** (empty text field)
- Off Msg:** (empty text field)
- DDE Access Name:** S01
- Item:** STATUS
- Use Tagname as Item Name**

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

=IBS_SC|topic!STATUS

Item/Point Naming

Supported DDE item types are Inputs and Outputs. Inputs and Outputs can be accessed as bits, bytes, words or double words (signed or unsigned). Item/point naming uses byte-oriented addressing. If word is addressed and byte number *w* is specified in item/point name, byte *w* will be word's high byte and byte *w+1* will be word's low byte. The following table describes item/point naming conventions:

Data Format	Item	Suffix	DDE Tag Type	Range
Bit	{Prefix}w.x		Discrete	0 or 1
Byte	{Prefix}Bb	KF	Integer Integer	0 to 255 -128 to 127
Low Byte	{Prefix}Lw	KF	Integer Integer	0 to 255 -128 to 127
High Byte	{Prefix}Hw	KF	Integer Integer	0 to 255 -128 to 127
Lower 12 bits	{Prefix}Aw		Integer	0 to 4095
Word	{Prefix}Ww	KF	Integer Integer	0 to 65535 -32768 to 32767
Double Word	{Prefix}Dd	KF	Integer Integer	0 to 4294967295 -2147483648 to 2147483647

Notes:

1. **b** - specifies byte address (0 to 511);
w - specifies address of word's higher byte (0 to 510, even number);
d - specifies address of double word's higher byte (0 to 508, even number).
2. For **Bit** data: **x** = 0 ... 15.
3. **Inputs** are Read Only and their {Prefix} is **I** or **E** (Eingang).
4. **Outputs** are Read/Write and their {Prefix} is **Q** or **A** (Ausgang).

Alternative item/point naming is supported, to enable use of old InTouch/other applications, earlier using other DDE Servers and INTERBUS boards. Alternative item/point naming uses word-oriented addressing. The following table describes item/point naming conventions:

Data Format	Item	DDE Tag Type	Range
Bit	{Prefix}wBITx	Discrete	0 or 1
Lower 12 bits	{Prefix}wAIN	Integer	0 to 4095
Word	{Prefix}wINT	Integer	0 to 65535

Notes:

1. **w** - specifies word address (1 to 256).
2. For **Bit** data: **x** = 0 ... 15.
3. **Inputs** are Read Only and their {Prefix} is **INPT**.
4. **Outputs** are Read/Write and their {Prefix} is **OUTP**.

Item/Point Naming Examples:

I2.7 - bit 7 of input word 2 (bytes 2 and 3)

IB3 - input byte 3 as unsigned integer

IB3KF - input byte 3 as signed integer

IW3 - input word 3 (bytes 3 and 4) as unsigned integer

IW3KF - input word 3 (bytes 3 and 4) as signed integer

Q3.0 - bit 0 of output word 3 (bytes 3 and 4)

QB4 - output byte 4 as unsigned integer

QB4KF - output byte 4 as signed integer

QW4 - output word 4 (bytes 4 and 5) as unsigned integer

QW4KF - output word 4 (bytes 4 and 5) as signed integer

Alternative item/point naming examples:

INPT3BIT9 - bit 9 of input word 3

OUTP4INT - output word 4 as unsigned integer

Notes on Using Microsoft Excel

Data from Server may be accessed from Excel spreadsheets. To do so, enter a formula like the following into a cell on the spreadsheet:

```
=IBS_SC|topic!item
```

Sometimes, Excel requires the topic and/or item/point to be surrounded by apostrophes. In the formula, **topic** must be replaced with one of the valid topic names defined during the Server configuration. Replace **item** with one of the valid item/point 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:

```
=IBS_SC|Device1_0!I2.7
=IBS_SC|Top02!QW0
```

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

Writing Values to IBS_SC Points

Values may be written to the IBS_SC 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("IBS_SC","topicname")
=POKE(channel,"itemname", Data_Reference)
=TERMINATE (channel)
=RETURN()
```

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

```
channel=INITIATE("IBS_SC","topicname")
```

Opens a channel to a specific topic name (defined in the Server) in an application with name IBS_SC (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 (some actual Interbus output) 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 **Top02** item **QW0**:

```
PokeMacro -Ctrl a
=INITIATE("IBS_SC","Top02")
=POKE(A2,"QW0",B2)
=ON.TIME(NOW()+0.01,"TerminateDDEChannel")
=RETURN()
```

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

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

Error Messages

Messages about errors detected by Server can be output either in Server window or in WWLogger window. As a rule, messages about errors detected during Server configuration dialog are output in Server window, but messages about errors detected during communication are output in WWLogger window. Most of communication errors are detected by controller board IBS PC ISA SC/I-T and corresponding error codes are returned to Server. Below is a list of most important error messages with some commentary. Most of the error messages are self-explanatory and does not require commentary.

Error: controller failure detected: error code=0XXXX

Error code is value returned to Server by IBS PC ISA SC/I-T controller board. Communication will be stopped. Server will try to resume communication after **Error Delay**, specified during **Board Configuration** dialog.

Error: searching for bus failure ...

Informs that serious bus failure happened. Outputs are reset to 0 and diagnostic routine is started to search for exact location of failure. When failure location is found, another error message will be written.

Error: bus failure detected on device segment_number.position_number

Faulty device is identified by its bus segment number and position number in segment. Communication will be stopped. Server will try to resume communication after **Error Delay** specified during **Board Configuration** dialog.

Error: peripheral failure detected on device segment_number.position_number

Faulty device is identified by its bus segment number and position number in segment. Communication will not be stopped.

Error: host is in STOP state

Outputs will be reset to 0.

Error: synchronisation error

Error: single data cycle failed

Error: Bus-Warning-Time ended without a valid data cycle

Error: 20 invalid data cycles occurred in a total of 1 million data cycles

Error: initialising of Board No. 1 was unsuccessful

Note: *Only one board is supported in this Server version.*

Error: InterBus-S start was unsuccessful

Server's attempt to start data transmission, between IBS PC ISA SC/I-T and INTERBUS devices, was unsuccessful. Possible cause: actual bus configuration does not match to configuration defined in IBS_SC_1.SVC file.

Error: no data transmission

Possible cause: **Start data transmission** check box was not set in **Board Configuration** dialog, during Server configuration, and data transmission between IBS PC ISA SC/I-T and INTERBUS devices is not started by other means (e.g. IBS CMD SWT G4 tool).

Error: error during reading file: path\IBS_SC_1.SVC

Check, whether controller board parameterization file IBS_SC_1.SVC exists.

Warning: actual Protocol Timer Tick is considerably longer then requested

Time, that passed since Server received control previous time, is considerably longer than requested Protocol Timer Tick. One of possible causes of this warning is some other program, keeping control for a long time. For example, scrolling of a long file in Wonderware Logger window with PgUp, PgDn keys will cause this warning.

Note: *This warning is written to Wonderware Logger window, only if mode **Verbose** is on, in IBS_SC window control menu.*

Troubleshooting

If you experience communication problems, while using the INTERBUS DDE Server, please, try the following suggestions.

Minimise your project to a size, at which problem still occurs. It will help us to reproduce your environment and problem. Gradually delete DDE Client (e.g. InTouch application) topics and items, INTERBUS devices. If Client application uses also other Servers, delete topics related to these Servers. Note, what was deleted last, when problem disappeared.

Obtain Wonderware Logger file as described below:

- Start Wonderware Logger.
- Start INTERBUS DDE Server. In Control menu (opened by clicking on rectangle in upper left corner of the Server window) select options **Show Errors, Show Send, Show Receive, Verbose, Debug**.
- Start DDE Client.
- In Server Control menu select command **Dump**.
- Wait, until error occurs.
- Close Client and Server.

Please, send us the obtained logger file, Server configuration file IBS_SC.CFG, controller board parameterization file IBS_SC_1.SVC, controller board driver configuration parameters (board number, IO-address, MPM-address, IRQ), IBS CMD G4 project, Client (e.g. InTouch) application, AUTOEXEC.BAT, CONFIG.SYS and SYSTEM.INI files.

KLINKMANN AUTOMATION
INTERBUS DDE Server for IBS PC ISA SC/I-T
Revision History

Mar 97	Rev 1.0	Release 1.0
Apr 97	Rev 1.1	Minor changes.
May 97	Rev 1.2	Support for Microsoft Windows NT added. Improved error processing.
Aug 97	Rev 1.3	Minor changes. Manual file name changed.
Aug 97	Rev 1.4	Minor changes.
Mar 2002	Rev 1.5	Installation from CD information added.