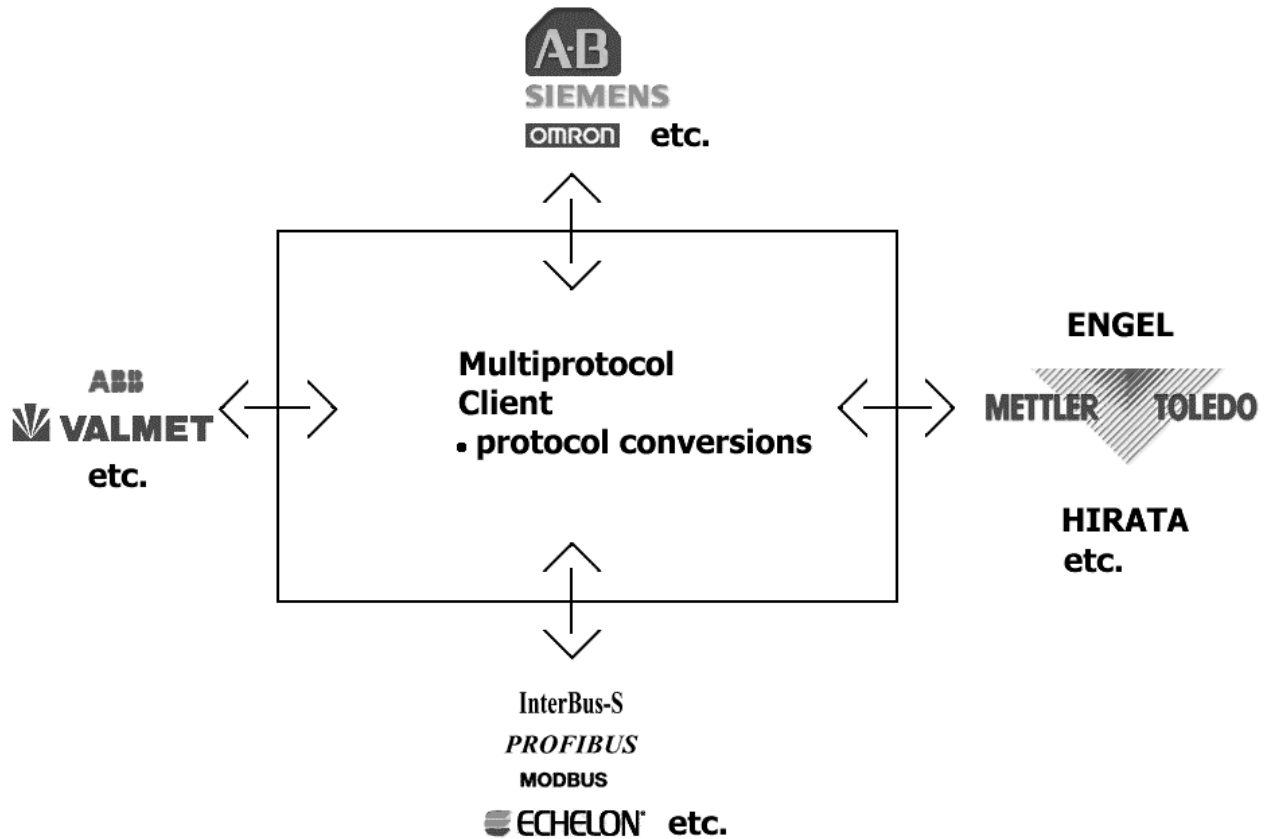


MultiProtocol DDE Client

for Microsoft Windows



User Manual
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MultiProtocol DDE Client

The Klinkmann Automation **MultiProtocol DDE Client** (MPDDE) is a MS Windows (NT or 95 (98)) application program, which allows to exchange data between two or more **DDE Servers** running concurrently on the IBM PC or compatible computer. The MPDDE is primarily intended for data transfer between incompatible automation environments (e.g. between Simatic PLCs in the Siemens Profibus L2 network and Omron PLCs in the Sysmac Link Network), but it may be used to exchange data between any Microsoft Windows programs that are capable of acting as a DDE Server.

What is DDE?

DDE (Dynamic Data Exchange) is a complete communication protocol designed by Microsoft to allow applications in the Windows environment to send and receive data and instructions each to 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 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 DDE Items from MPDDE

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 example, in the case of data coming from or going to Siemens Profibus L2 network and Klinkmann Automation Profibus L2 DDE Server is used, the application portion of the DDE address is **PROFIBUS**.

Topic is an application-specific sub-group of data elements. Usually DDE servers consider each connected PLC or some other unit to be a separate topic, however more than one topic can be attached to same PLC or unit. The user creates meaningful name for each of them and uses this name as the topic name for DDE references.

Item indicates a specific data element within the specified topic. The DDE item naming is unique for each DDE server.

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

Installing the MPDDE Program

The MPDDE program installation package can be supplied:

1. As a self-extracting archive P050_xxx.EXE if downloaded from Klinkmann's web site (the xxx is the current (latest) version of the MPDDE program).
2. From installation on CD.
3. On two or three distribution disks (floppies).

To **install** the MPDDE program from the self-extracting archive, run the P050_xxx.EXE and proceed as directed by the MPDDE program Setup program.

To **install** the MPDDE program from CD or distribution disks (floppies), on MS Windows (NT or 95 (98)):

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

When installation is finished, the subdirectory specified as a folder where to install the MPDDE program will contain the following files:

MPDDE.EXE The MPDDE program. This is a MS Windows 32-bit application program.

MPDDE.HLP	The MPDDE Help file.
EXAMPLE.DDE	An example DDE description file.
LICENSE.TXT	Klinkmann Automation software license file.
DBGDLL32.DLL	Dynamic Link Library used by MPDDE program on Windows 95.
DBGD32NT.DLL	Dynamic Link Library used by MPDDE program on Windows NT

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

Main Features

The MultiProtocol DDE Client program has the following main features:

- Supports the data exchange between any MS Windows applications supporting DDE interface.
- The special DDE description file (ASCII format) is supported, where all information about DDE connections, items and links of items can be entered manually by any text editor before starting the MPDDE program.
- The description of DDE connections, items and links of items also can be entered by MPDDE menu system and then saved in the DDE description file .
- Several DDE description files can be used simultaneously and loaded when starting MPDDE.
- The MPDDE main window can be used for monitoring of active DDE links and values of active DDE items.
- The special Logger program can be used to monitor and debug the data exchange through MPDDE. The Logger program stores all data in the log file with name YYMMDD.LOG where YY is a current year, MM is a current month and DD is a current day. Also last 100 log lines are displayed on the Logger program main screen.
- The CF_TEXT clipboard format is used for DDE data transfer.

DDE Description File

The DDE description file is an ASCII format file, where all information about DDE connections, items and links of items can be entered manually by any text editor before starting the MPDDE program. If created with text editor then the DDE description file format must follow the format described below.

Loading DDE Description File

The DDE description file can be loaded from command line at MPDDE startup or later from MPDDE **File** Menu. At startup more than one file can be loaded from command line. If more than one file is loaded then all files are processed concurrently (not each after other).

The MPDDE command line syntax is

```
MPDDE <file1> <file2> <file3> ...
```

where <file1>, <file2>, <file3> - the names of DDE description files to load at startup.

If the DDE description file contains errors then they are logged to the Logger program. The processing of long files can be time consuming.

DDE Description File Format

Each DDE description file line must start with "AC", "AT", "AL", "# or ";". The "AC", "AT" and "AL" lines are data lines and "# and ";" are comment lines.

There can be many "AC", "AT" and "AL" lines in the DDE description file.

"AC" lines

The "**AC**" line describes the DDE Connection. The definition of DDE Connection is similar to the definition of DDE Access Name used in WonderWare InTouch. The format of "AC" line is:

```
AC[A] <ConnectionName> <Application> <Topic>
```

or

```
AC MEMORY
```

where

[A] is an optional flag used to automatically initialize the DDE Connection when DDE Description file is loaded;

<ConnectionName> is the name of DDE Connection and is used in "AT" lines to identify the DDE Connection; if the **<ConnectionName>** is **MEMORY** then this connection is not a DDE Connection and **<Application>** and **<Topic>** are not needed - in this case all Tags of this Connection are Memory Tags and are kept in MPDDE; the **<ConnectionName>** must be unique and is not used for DDE transactions.
<Application> is the name of DDE Server to connect to.
<Topic> is the name of Topic used by DDE Server with name **<Application>**.

"AT" lines

The "AT" line describes the Tag (DDE Item or Memory Tag). In the DDE description file the DDE Connection "AT" lines can be specified only after the corresponding "AC" line is specified. The definition of Tag is similar to the definition of Tag Name used in WonderWare InTouch. The format of "AT" line is:

AT[A] <TagName> <ConnectionName> <Item>

where

[A] is an optional flag used to automatically advise the Tag when DDE Description file is loaded and DDE Connection has been initialized;
<TagName> is the name of Tag and is used in "AL" lines to identify the Tag; the **<TagName>** must be unique and it is not used for DDE transactions;
<ConnectionName> is the name of DDE Connection the tag belongs to; it should be defined in some this file "AC" line;
<Item> is the name of DDE Item used by corresponding DDE Server; the **<Item>** must be unique for Connection, but other Connections may have Tags with same **<Item>** names; for Memory Tags this field is not used but it must present.

"AL" lines

The "AL" line describes the links between Tags (DDE Items or Memory Tags). The link between Tags means that value of some Tag is sent to other Tags when it changes. In the DDE description file the "AL" line can be specified only after the corresponding "AT" line is specified. The format of "AL" line is:

AL <TagFrom> <TagTo1> [TagTo2] [TagTo3]...

where

<TagFrom> is the source tag name; the value of this tag is sent to **<TagTo1>** and all following this line Tags; the DDE description file can contain several lines with same **<TagFrom>**.

<TagToX> is the name of tag that receives the <TagFrom> changed value; the <TagToX> can not be equal to <TagFrom>; only <TagFrom> and <TagTo1> are required, all other tag names are optional.

Comments

The characters "#" and ";" at any position marks the beginning of comment, the end of comment and the end of line. The DDE description file can contain empty lines. The <SPACE> and <TAB> can be used to separate fields.

Special Characters

The characters "#", ";", "\", "|", <CR>, <LF>, <TAB> and <SPACE> can not be directly used in the <ConnectionName>, <Application>, <Topic>, <TagName> and <Item>. But if some of these characters must be used they can be obtained by replacing them as follows:

#	with	\y
;	with	\x
\	with	\\
<CR>	with	\r
<LF>	with	\n
<SPACE>	with	\s

DDE Description File Example

```
#---BEGIN---cut-here-----
AC Nem1      NEM_DDE      node1 ;connection to Nematron DDE Server
; NEM_DDE is a good choice because it works without hardware

AT 1W100     Nem1 W100   ; tags for NEM_DDE|node1
AT 1W101     Nem1 W101
AT 1W102     Nem1 W102
AT 1W103     Nem1 W103
AT 1W104     Nem1 W104
AT 1W105     Nem1 W105
AT 1W106     Nem1 W106

AC TP TESTPROT  TOPIC ; connection to TESTPROT; TESTPROT comes with
; WonderWare InTouch v5.6

AT i01       TP        i01
AT di100     TP        di100
AT di101     TP        di101
AT di102     TP        di102
AT di103     TP        di103

# Links - data sent from TESTPROT to NEM_DDE
AL di100     1W100
AL di101     1W101
AL di102     1W102
AL di103     1W103 1W104
AL di103     1W105
```

```
AL 1W105 di103 ; data sent back from NEM_DDE to TESTPROT
; in this case it is senseless because TESTPROT does not accept data
; this just shows how to create bi-directional links
```

```
AC MEMORY ; memory pseudo connection
AT Mem14 MEMORY 0 ;some memory Tags
AT Mem15 MEMORY 1
AT Mem16 MEMORY tt7
AT m17 MEMORY 3
AT 18 MEMORY rtc
AT memtag MEMORY rrt
```

```
AL di101 Mem14 Mem15 ; Links - data sent from TESTPROT to MEMORY
AL di102 Mem15 m17
AL di103 18
```

```
AL m17 1W106 ; data sent from MEMORY to NEM_DDE
AL 1W106 memtag ; data sent from NEM_DDE to MEMORY
#----END----cut-here-----
```

Main Menu Commands

The MPDDE top-level menu items performs the following main actions:

File

Loads new DDE description file, saves modified DDE description file and starts Notepad (default) or any other text editor configured for DDE description file editing.

New

Creates new DDE connection and DDE item, establishes new link between DDE items and deletes existing DDE connections, items and links.

DDE

Initiates and terminates some or all created DDE connections, executes DDE Advise, Unadvise, Poke and Request.

Quit

Terminates all active DDE links and stops the MPDDE program.

KLINKMANN AUTOMATION
MultiProtocol DDE Client
Revision History

Apr 97	Rev 1.0	First Release
Aug 97	Rev 1.1	Minor changes. Manual file name changed.
Dec 97	Rev 1.2	Picture added to first page.
Jan 98	Rev 1.3	Windows NT version added.
Mar 2002	Rev 1.4	Installation from CD information added.