



*DDE Driver
User's Manual*

Doc. No. ENP4015
Version: 29-08-2005

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1. DDE Driver

1.1. Driver Use

The driver DDE is used to define the channel of the ASMEN module referring the variables shared by the driver of industrial controller implemented as a DDE server (called further shortly a DDE server).

In the new version of the driver while defining the ASMEN module channel, besides a DDE server name, also a name of the service registered by the DDE server and a DDE connection name have to be declared. Thanks to association of a DDE connection with a channel instead of with each variables separately, the way of variable definition is significantly simplified and the definitions of variables are more legible.

Supporting the variable groups allows the DDE driver to receive data from a DDE server in form of groups of variables and not only in form of single variables. Thanks to such solution the performance of data transmission may increase enormously. The maximal transmission performance by using the DDE protocol amounts up to 150 single-element groups of variables per second (at a computer with PCU Pentium 166 MHz) and descends slowly when the group size increases. If a group contains only one variable, then it is possible to transfer 150 variables per second whereas the group size amounts e.g. 25 variables, then it is possible to transfer 3000 variables per second.

A DDE server within each connection may make available a special variable, the value of which defines whether the variables retrieved from this connection have correct values, whether the connection with an industrial controller works correctly. The DDE driver assumes that such special variable has the *Status* name, but it is possible to define such variable separately for each DDE connection.

1.2. External Specification

The DDE driver is a dynamic link library (DLL) with an interface meeting requirements of the ASMEN module. ASMEN starts the driver after having found in the [ASMEN] section of application configuration file a definition of the channel referring to the DDE driver in the following form:

$$\text{channel_name} = \text{DDE}, \text{service}, \text{topic}$$

where:

<i>channel_name</i>	- channel name of the ASMEN module;
<i>service</i>	- service name registered by the DDE server;
<i>topic</i>	- topic name of a connection supported by the DDE server.

The names of connection service and topic are specific for each driver of the industrial controller implemented in form of a DDE server and their description may be found in the documentation of a given driver.

EXAMPLE

Examples of channel definitions.

KanAdam = DDE, Adam, E2018

The ASMEN channel named KanAdam is associated with a DDE driver and the topic of connection named E2018, made available by the DDE server named Adam.

KanGE = DDE, GESNP, GE

The ASMEN channel named KanGE is associated with the DDE driver and the topic of connection named GE, shared by the DDE server named GENSP.

1.3. Variable Definitions

After the DDE driver start-up the ASMEN module transfers to the DDE driver an information about process variables taken from the definition file of variables. The definition of a variable used by the DDE driver is as follows:

asmen_variable, description, „item / number_in_group / type“, channel_name, quantity, refreshing_frequency, conversion_function

where:

<i>asmen_name</i>	- variable name of the ASMEN module;
<i>item</i>	- name of a variable or a group of variables accessed by the DDE server, maximal length of this name amounts 255 characters (255 characters, it is the maximal length of text served by the DDE protocol);
<i>number_in_group</i>	- number of a variable in the group of variables to which the ASMEN variable refers; the enumeration begin from 1; if the DDE server as the <i>item</i> sends variables individually, then this parameter should have a value of 1;
<i>type</i>	- type of the ASMEN variable.

As the *type* parameter it may be given the letter:

S – short,
 W – word,
 L – long,
 D – double word,
 F – float.

The variable type definition is necessary to make possible the variable conversion to the binary form, used by the ASMEN module. The data from the DDE server are sent in text form and it is not possible to define their type unambiguously, therefore its type in variable definition is defined as public.

If a variable is to be not only read but also written, then the source of such variable in a DDE server must be a single variable. If to the ASMEN variable, which is not a part of variables group, you try to give a new value from the application level of **asix**, then an error occurs. If it were possible to give a new variable to only one variable in the group, the DDE driver while sending this group to the server should send also new values of the other variables in this group. The use of recently sent values of the other variables in the group as their new values might cause hard perturbations.

EXAMPLE

Examples of variable definitions.

Z1, "O1, 1, W", KanAdam, 1, 1, NOTHING

The ASMEN variable Z1 is associated with the first variable in the variable group named O1 taken from the DDE server specified in the definition of the KanAdam channel.

Z2, "%I1, 5, s", KanalGE, 1, 1, NOTHING

The ASMEN variable Z2 is associated with the fifth variable in the variable group named %I1 taken from the DDE server specified in the definition of the KanalGE channel.

1.4. DDE Section

The DDE section in the INI file of an **asix** application may contain the following entry.



StatusVariable = service, topic, item

Meaning	- the item of an initialization file, it defines the name of a variable handled by the DDE server. It allows to monitor the connection status of the DDE server with an industrial controller. If the value of this variable equals 1, the connection with the controller works correctly; if the variable value equals 0, the connection with the controller is broken. In order to define a status variable it is necessary in the initialization application file to define the item <i>StatusVariable</i> and to give to it a value in the format <i>service, topic, item</i> .
Default value	- by default, it is assumed that there is no status variable within the connection.
Parameter:	
<i>service</i> and <i>topic</i>	- define the connection;
<i>item</i>	- is the name of status variable within this connection.

A DDE server may support many DDE connections simultaneously and for each of them a status variable may be defined separately.

EXAMPLE

Examples of definition of status variable:

```
[DDE]
StatusVariable = TPERM, S1, Connected
```

Within the connection TPERM, S1 the name of the status variable is Connected.

1.5. Thread Priority of the Driver

PriData – value of thread priority of the driver sending data to the ASMEN module, the default value is set to 1.

1.6. Internal Specification

The driver, at the first reference to the DDE server described by a pair of *service, topic*, establishes a connection with this server and keeps it on continuously up to ending the activity of the driver or of the DDE server. At the first reading of the first variable belonging to the variable group a refreshing of this variables group begins. The new values are written to the internal buffer of the driver and transferred to the ASMEN module in case of reading of refresh type. In case of ordinary reading the data are read directly from the DDE server. If it is not possible to begin refreshing, the variable value is read at each reference of the ASMEN module to it. Writing operations are carried out always synchronously and they update the internal buffer of the variable.

In case of breaking the connection with a DDE server, the DDE driver tries to rebuild this connection.

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