PLC-ANALYZER pro 6

PLC-Logic analysis in no time

Driver Addendum

PLC-driver

Siemens SIMOTION C/P/D

MPI/PROFIBUS/Ethernet TCP/IP, servo-cycle precise

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PLC-ANALYZER pro **6 - Driver Addendum**

Siemens SIMOTION C/P/D - MPI/PROFIBUS/Ethernet TCP/IP, servo-cycle precise

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For references, suggestions and improvement suggestions we are always grateful. Please send these to AUTEM.

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Signal source

Siemens SIMOTION C/P/D

This driver addendum describes the particularities of the following PLC drivers and gives you hints on using them.

- Siemens SIMOTION C / P / D - MPI / PROFIBUS / Industrial Ethernet TCP/IP

With the PLC driver SIMOTION C / P / D - MPI / PROFIBUS / Industrial Ethernet TCP/IP variables can be acquired via MPI-interface, PROFIBUS or Industrial Ethernet (TCP/IP).

In addition it is possible to record servo-cycle precise. Chapter Trace shows particularities from this kind of recording

It is important that you read through the driver addendum before using a PLC driver. Please pay attention to the WARNINGS that advise you on possible dangers when using PLC-ANALYZER pro.

> **!** **WARNING**
>
> Errors that may occur in the automated facility, endangering humans or causing large-scale material damage, must be prevented by additional precautions. These precautions (e.g. independent limit monitors, mechanical interlocks) must guarantee safe operation, even in case of dangerous errors.

Installation

The PLC driver can be added to the project as a new signal source. If the driver you want is not yet in the list of available signal sources, you must first activate the license for the PLC-driver with the AUTEM LicenseManager on your computer.

Installing additional hardware

If you have already connected your programming unit (or your PC) for programming with the automation device through a PROFIBUS-, Ethernet- or an MPI interface for the reason of programming with SIMOTION SCOUT, normally nothing else must be done.

Installing additional software

STEP 7 (version 3.0 or greater) must be installed on your computer to use the SIMOTION driver.

You additionally have to install SIMATIC NET, if you want to establish a connection via Industrial Ethernet.

Configuration Open driver settings to set important parameters for data recording. If you have added the driver to the project several times, you can set the properties individually for each individual driver.

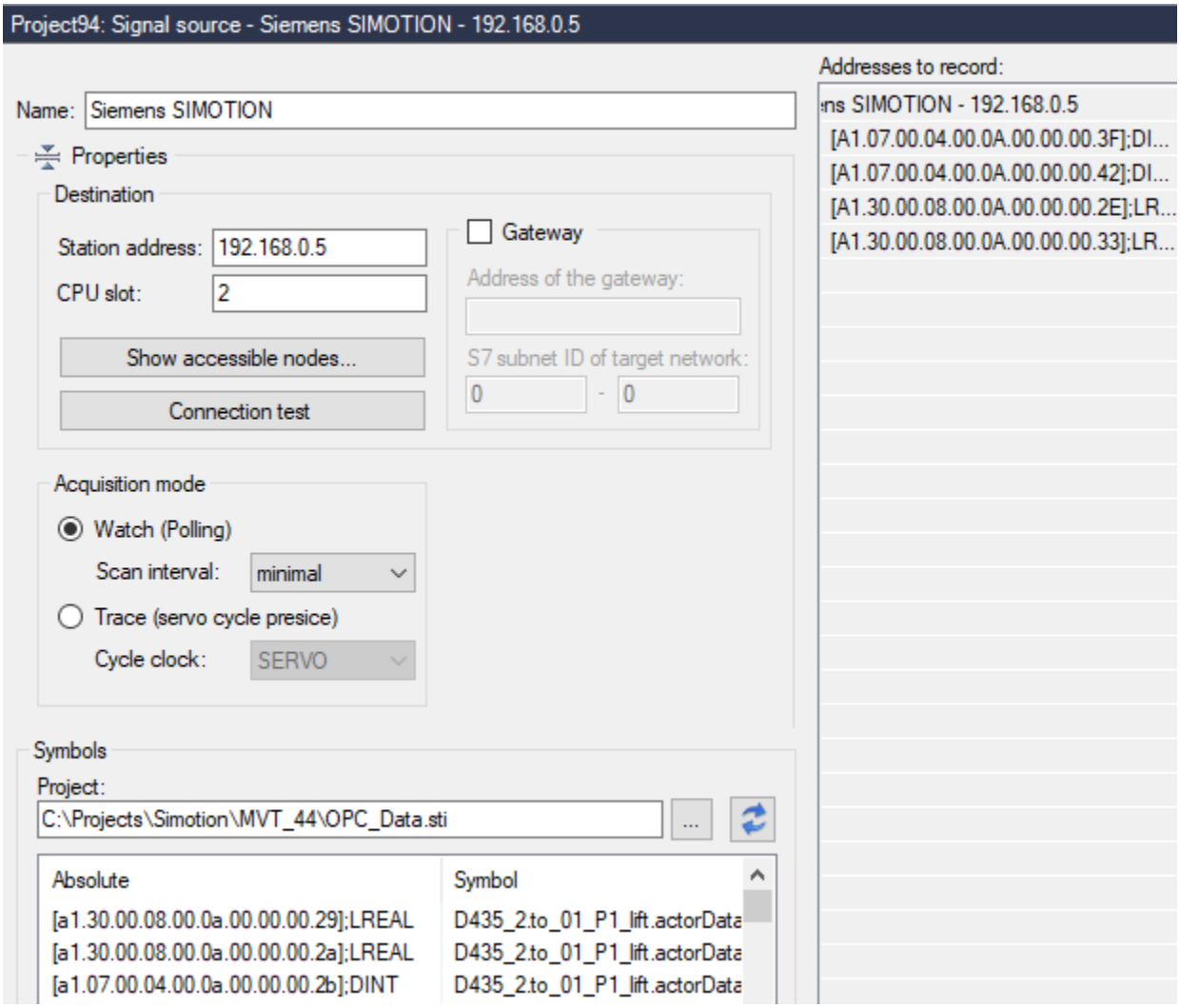

Fig. 1-1 Settings Siemens SIMOTION

Choose a meaningful *Name* for the driver first. Set the *Station address* and the *slot number* of the desired CPU. Depending on the PLC driver, the *Station address* can be an MPI/PPI/PROFIBUS- or an Ethernet address.

Show accessible nodes provides you with an overview of reachable nodes. Use *Connection test* to check whether a connection to the controller can be established successfully.

> **NOTE**
>
> You can enter either the TCP/IP-address or the MAC-address of the CP. Pay attention to enter under slot the slot of the CPU and not the slot of the CP.

If the station can only be reached via a gateway, activate Gateway. Specify the *station address* of *the network transfer* and *the S7 subnet ID of the target network*. Activate Gateway only if there indeed a cross over occurs, e.g. from Ethernet to PROFIBUS. Refer to the hardware configuration of your STEP7 project for these settings:

If the CPU is reachable via a gateway only, please activate Gateway. Enter *Address of Gateway* and *S7 subnet ID of target network*. Refer to the hardware configuration of your SIMOTION SCOUT project to determine these settings.

Under *Scan interval* you specify the time interval at which measured values are read out from the PLC. A longer sampling interval can be selected for signal paths that are not time-critical, e. g. temperature. As a result, the generated signal files become smaller.

Set under *Acquisition mode,* whether you want to record data via *Watch (Polling)* or *Trace*. Particularities of both recording methods are shown under Acquisition modes.

Under *Symbols,* select a SIMOTION SCOUT OPC-export file to make the symbols of this project available for address selection. This makes it possible to use symbolc identifiers when entering addresses. In addition to the absolute address, the symbolic identifier and comment are also displayed and stored in a signal- or project file.

After setting the communication properties, add the PLC signals to be recorded. When a STEP7 or TIA project is loaded, the signals to be recorded can be conveniently selected from the symbol list by double-click or drag and drop.

Create symbol file in SIMOTION SCOUT

A symbol file is necessary to record data (variables) in acquisition mode „Watch“. Create this symbol file with your Siemens programming software SIMOTION SCOUT.

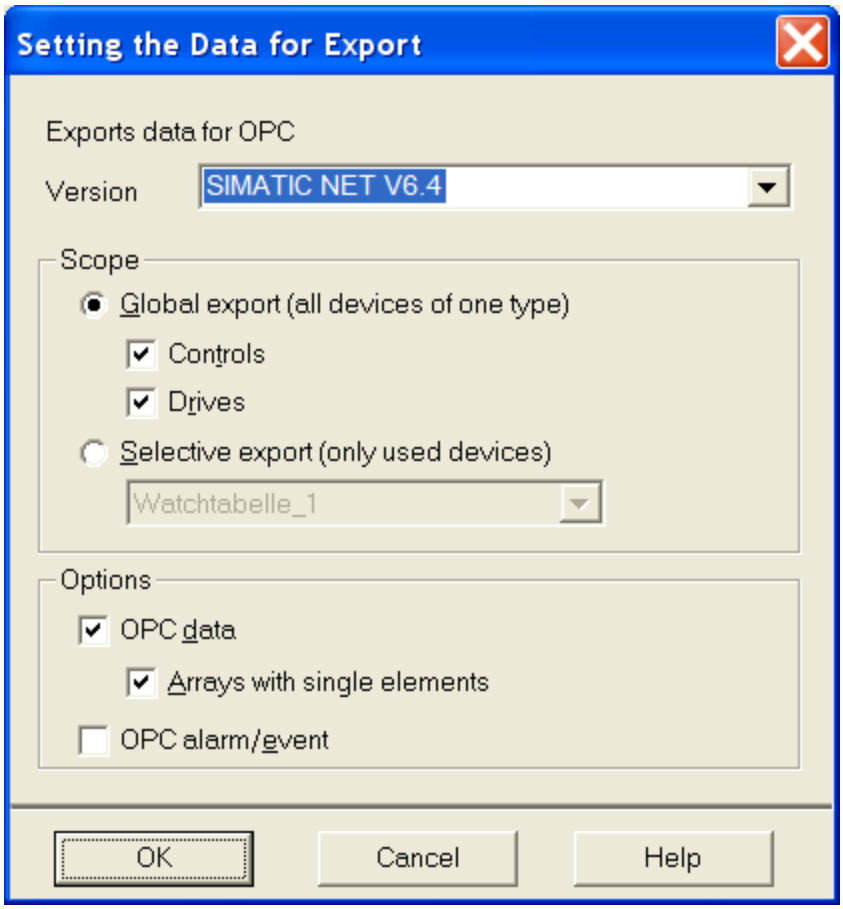

Fig. 1-3 Export symbol files

Open the project whose symbols you want to export. Then select *Export OPC-data* in menu Options.

When the export window appears, choose *Version* „SIMATIC NET V6.4”.

Under *Scope* select the data data you want to export. Choose under *Options* the control field *OPC-Data* and *Arrays with single elements*.

Click *OK* to apply the settings. After this you will be asked to enter the target directory for export files.

Click *OK* to confirm and start export.

Data acquistion

Supported PLC models and CPUs

The PLC driver SIMOTION C / P / D - MPI / PROFIBUS / Industrial Ethernet TCP/IP supports all CPUs of Siemens SIMOTION C, P and D.

Acquisition modes

The SIMOTION driver supports two different acquisition modes, which can be selected in the driver settings.

Watchmodus (Polling)

In acquisition mode „Watch“, the data will be acquired from SIMOTION cyclically (polling). You only can record those variables, which do exist in the loaded symbol file (s. Create symbol file in SIMOTION SCOUT). Static memory addresses can be addressed without a symbol file (e.g. I32.7, Q41.0).

Using “Watch” mode a maximum of 16 million addresses can be acquired from up to 250 signal sources.

Trace

In acquisition mode „Trace“, selected signals are recorded in each SIMOTION servo cycle without break. Using “Trace” mode a limited number of signals are pre-recorded in the SIMOTION. The selected signals are stored to SIMOTION memory in each servo cycle and afterwards transferred to PC by use of sophisticated methods. So a servo cycle precise recording is possible. The number of the signals to be recorded is limited to 8 in “Trace” mode.

Recordable PLC addresses

All variables, which are contained in the loaded symbol file, can be recorded. Beside the symbol file variables you can record also static memory addresses of the SIMOTION in acquisition mode “Watch”.

The following table shows the recordable addresses and the corresponding address syntax:

Syntax	Address type	Example
Qx.z	Output byte x, bit z	Q32.4
QBx	Output byte x (as bits)	QB9
QWx	Output word x	QW14
QDx	Output double word x	QD98
Ix.z	Input byte x, bit z	I17.0
IBx	Input byte x (as bits)	IB127
IWx	Input word x	IW124
IDx	Input double word x	ID124
DByDBXx.z	Data byte x, bit z from data block y	DB23DBX2.5
DByDBBx	Data byte x from data block y	DB2DBB5
DByDBWx	Data word x from data block y	DB2DBW5
DByDBDx	Data double word x from data block y	DB2DBD0

Syntax	Address type	Example
PIB x	Peripheral input byte x	PEB 231
PIW x	Peripheral input word x	PEW 232
PID x	Peripheral input double word x	PED 304

Table 1-1 Address-Syntax SIMOTION

Number of recordable addresses

In the "Watch" acquisition mode a maximum of 16 million addresses can be acquired from up to 250 signal sources. In "Trace" mode the number of the signals to be recorded is limited to 8.

Time behaviour and particularities

NOTE

Acquiring data with PLC-ANALYZER pro results in a small increase in cycle time in the PLC to the same manner as it happens with programming software in the online-mode.

Using acquisition mode „Watch“ scan intervals from SIMOTION PLC to PC depend on the cycle time of the SIMOTION-CPU, the number of signals to be recorded and the connection interface. In addition the scan interval is influenced from the size of the framework and the rate of communication.With Industrial Ethernet (TCP/IP) the minimum scan interval is about 6 ms. Using „Trace“, max. 8 signals will be recorded during each SIMOTION servo cycle scan. So the scan interval depends on the servo cycle.