S7ETHERNET Communication Server

The Klinkmann Automation S7ETHERNET Communication Server is a Microsoft Windows application program that acts as a communication protocol Server and enables other Windows application programs to access the data from S7-300 controllers. The S7Ethernet Server provides access to a Siemens PLC through an off-the-shelf standard Ethernet network interface card in the computer and uses the “ISO over TCP” communication protocol, implemented by Libnodave library.

Any Microsoft Windows program that is capable of acting as a DDE, FastDDE, SuiteLink or OPC Client may use the S7ETHERNET Server.

There are following S7ETHERNET Server versions available:
- S7ETHERNET DDE & Suite Link Server (32-bit), can be used on MS Windows NT, W2K, XP and 95 (98);
- S7ETHERNET OPC & DDE Server, can be used on MS Windows NT, W2K, XP and 95 (98).

Note!
The main advantage of using S7Ethernet Server (supporting “ISO over TCP” protocol) if compared with software using the “S7 communication protocol” (for example, with Wonderware SIDirect DAServer), is the significant Ethernet communication speed improvement for communication with Simatic CPU 317-2 PN/DP controllers (firmware V2.5.0 and newer).

Features

The **OPC** support for S7ETHERNET Server OPC & DDE version conforms to OPC Access Custom Interface Specification 2.04. The S7ETHERNET Server OPC & DDE version is tested for compliance and is compatible with OPC Foundation OPC Data Access Compliance Test Tool.

The S7ETHERNET Server DDE & Suite Link version (if running on MS Windows NT) supports the Wonderware **Suite Link** communication protocol.

Supports simultaneous interface to Siemens STEP 7 programming software.

Provides access to a Siemens PLC through an off-the-shelf standard Ethernet network interface card in the computer and uses the “ISO over TCP” communication protocol, implemented by Libnodave library.

The S7ETHERNET Server supports item/point names that are consistent with the addressing and point naming used in Siemens S7 PLCs.

Minimizes system message traffic by dynamically calculating and optimizing poll lists for client-requested items/points.

Supports multiple topics for each PLC, allowing different data update rates.

Provides a communication status flag for each topic.

Supports standard DDE among multiple applications.
Specifications

**Hardware:** IBM or compatible 386/486/Pentium equipped with a minimum of 4 MB RAM (16 MB RAM for Windows NT). May require more memory to run other Windows programs simultaneously.

**Software:** Microsoft Windows 95 (98), Microsoft Windows NT 4.0, W2K and XP.

**Computer Interface:** Ethernet TCP/IP connection, by using the “ISO over TCP” communication protocol, implemented by Libnodave library.

**Maximum Connections:** As many as necessary S7-300 controllers connected to Ethernet network can be accessed.

**Devices Supported:** Siemens Simatic S7-300 and S7-400 PLCs.

**Accessible Data Types:**

- The S7ETHERNET Server supports item/point names consistent with the system used for addressing of data areas in the Siemens S7 PLCs. The following data areas are supported:
  - Data Blocks
  - Flags
  - Inputs
  - Outputs

The wide range how to interpret the data is supported: bits, bytes, byte arrays (as strings), chars, char arrays (as strings), words, word arrays (as strings), integers (signed, BCD), integer arrays (as strings), double words (unsigned, BCD), double word arrays (as strings), double integers (signed, BCD), double integer arrays (as strings), reals, real arrays (as strings). The special additional items can be used e.g. to start/stop the PLC program etc.

Ordering Information

**Description / Order Number**

- S7ETHERNET DDE & Suite Link Server Manual & Disk Set / [DR 570 10](#)
- S7ETHERNET OPC & DDE Server Manual & Disk Set / [DR 570 11](#)
The Klinkmann Automation S7ETHMPI Communication Server is a Microsoft Windows application program that acts as a communication protocol Server and enables other Windows application programs to access the data from S7-300 and S7-400 controllers using the Ethernet Gateway (communication adapter-cable) for MPI, providing interface between 10/100 Mbps Ethernet and Siemens MPI bus. The connection is possible with a hub or switch or via a crossover cable directly with PC network card, the used protocol is standard TCP/IP.

Any Microsoft Windows program that is capable of acting as a DDE, FastDDE, SuiteLink or OPC Client may use the S7ETHMPI Server.

There are following S7ETHMPI Server versions available:
- S7ETHMPI DDE & Suite Link Server (32-bit), can be used on MS Windows NT, W2K, XP and 95 (98);
- S7ETHMPI OPC & DDE Server, can be used on MS Windows NT, W2K, XP and 95 (98).

Note!
The current version of S7ETHMPI Server supports only point-to-point connection, i.e. only one PLC can be accessed via one communication adapter-cable.

Features

- The OPC support for S7ETHMPI Server OPC & DDE version conforms to OPC Data Access Custom Interface Specification 2.04. The S7ETHMPI Server OPC & DDE version is tested for compliance and is compatible with OPC Foundation OPC Data Access Compliance Test Tool.

- The S7ETHMPI Server DDE & Suite Link version (if running on MS Windows NT) supports the Wonderware Suite Link communication protocol.

- Supports simultaneous interface to Siemens STEP 7 programming software.

- The communication adapter-cable is configured via the Ethernet by using the configuration software running on a PC connected to the same Ethernet segment as the Ethernet Gateway. The configuration software is supplied together with communication adapter.

- The S7ETHMPI Server supports item/point names that are consistent with the addressing and point naming used in Siemens S7 PLCs.

- Minimizes system message traffic by dynamically calculating and optimizing poll lists for client-requested items/points.

- Supports multiple topics for each PLC, allowing different data update rates.

- Provides a communication status flag for each topic.

- Supports standard DDE among multiple applications.
Specifications

**Hardware**: IBM or compatible 386/486/Pentium equipped with a minimum of 4 MB RAM (16 MB RAM for Windows NT). May require more memory to run other Windows programs simultaneously.

**Software**: Microsoft Windows 95 (98), Microsoft Windows NT 4.0, W2K and XP.

**Computer Interface**: Ethernet TCP/IP connection with a hub or switch or via a crossover cable directly with PC network card.

**Maximum Connections**: As many as necessary S7-300 and S7-400 controllers connected to Ethernet network can be accessed. Each controller needs own communication adapter-cable to be connected.

**Devices Supported**: Siemens Simatic S7-300 and S7-400 PLCs.

**Accessible Data Types**: The S7ETHMPI Server supports item/point names consistent with the system used for addressing of data areas in the Siemens S7 PLCs. The following data areas are supported:

- Data Blocks
- Flags
- Inputs
- Outputs

The wide range how to interpret the data is supported: bits, bytes, byte arrays (as strings), chars, char arrays (as strings), words, word arrays (as strings), integers (signed, BCD), integer arrays (as strings), double words (unsigned, BCD), double word arrays (as strings), double integers (signed, BCD), double integer arrays (as strings), reals, real arrays (as strings). The special additional items can be used e.g. to start/stop the PLC program etc.

Ordering Information

**Description / Order Number**

- S7ETHMPI DDE & Suite Link Server Manual & Disk Set / DR 470 10
- S7ETHMPI OPC & DDE Server Manual & Disk Set / DR 470 11
S5PGPORT Communication Server

The Klinkmann Automation S5PGPORT Communication Server is a Microsoft Windows application program that acts as a communication protocol Server and allows other Windows application programs to access the data from SIEMENS SIMATIC S5 Programmable Logic Controllers (S5-95U, S5-115U, S5-135U, S5-155U, Sinumerik 840C) using SIMATIC S5 Programming Port Interface.

Any Microsoft Windows program that is capable of acting as a DDE, FastDDE, SuiteLink or OPC Client may use the S5PGPORT Server.

There are following S5PGPORT Server versions available:
- S5PGPORT DDE & Suite Link Server (32-bit), can be used on MS Windows NT, W2K, XP and 95 (98);
- S5PGPORT OPC & DDE Server, can be used on MS Windows NT, W2K, XP and 95 (98).

Features

The OPC support for S5PGPORT Server OPC & DDE version conforms to OPC Data Access Custom Interface Specification 2.04. The S5PGPORT Server OPC & DDE version is tested for compliance and is compatible with OPC Foundation OPC Data Access Compliance Test Tool.

The S5PGPORT Server DDE & Suite Link version (if running on MS Windows NT) supports the Wonderware Suite Link communication protocol.

The S5PGPORT DDE Server can handle the complete list of SIEMENS Simatic S5 PLCs. To communicate with certain CPUs, the S5PGPORT Server has to know the type of CPU. The following selections are available:
- Simatic S5 135U with CPU 922, 928, 928B.
- Simatic S5 115U with CPU 945 or Simatic S5 155U with CPU 946 or CPU 947.
- Sinumerik PLC with CPU 840C.
- All remaining Simatic S5 PLCs with CPUs not listed above (default setting).

The S5PGPORT DDE Server uses an item/point naming convention, based on the two - letter data type identifiers, used to program Siemens PLCs.

Supports point - to - point communication between PLC and computer.

Minimizes system message traffic by dynamically calculating and optimizing poll lists to read only, client - requested items/points.

Supports multiple topics, allowing different data update rates for each PLC.

Provides a communication status flag for each topic.

Supports standard DDE among multiple applications.
Specifications

**Hardware:** IBM or compatible 386/486/Pentium equipped with a minimum of 4 MB RAM (16 MB RAM for Windows NT). May require more memory to run other Windows programs simultaneously.

**Software:** Microsoft Windows 95 (98), Microsoft Windows NT 4.0, W2K and XP.

**Computer Interface:** RS-232 on computer side through the loop converter to PLC programming port.

**Maximum Connections:** One PLC can be connected to one serial port.

**Devices Supported:** S5-95U, S5-115U, S5-135U, S5-155U, Sinumerik 840C.

**Accessible Point Types**
The following are the supported Item/Point Types:
- Data Blocks
- Extended Data Blocks
- Flags
- Inputs
- Outputs
- Counters
- Timers
- Absolute Address

Ordering Information

**Description / Order Number**
- S5PGPORT DDE & Suite Link Server Manual & Disk Set / DR160 10
- S5PGPORT OPC & DDE Server Manual & Disk Set / DR160 11
S7 PROFINET Communication Server
High-speed communication with Siemens S7 controllers via PROFINET

The Klinkmann Automation S7 PROFINET Communication Server is a Microsoft Windows application program that acts as a communication protocol Server and enables other Windows application programs to access the data from S7-300/400 controllers via the PROFINET interface. The S7 PROFINET Server provides access to Siemens S7 PLCs through an off-the-shelf standard Ethernet network interface card in the computer, based on PROFINET specification V2.02 and using the PROFINET CBA Runtime Software version 2.02:

There are two different S7 PROFINET Server versions available:
- S7 PROFINET Server “Suite Link and DDE” version (ordering number DR 590 10), supporting SuiteLink, FastDDE and DDE protocols;
- S7 PROFINET Server “OPC and DDE” version (ordering number DR 590 11), supporting OPC and DDE protocols.

The main advantage of S7 PROFINET Server is a very fast communication speed if compared with other Ethernet based software used for communication with Siemens S7 controllers: for example, only 15 milliseconds read (polling) cycle is needed to read 1400 consecutive bytes from controller.

The S7 PROFINET Server can communicate with any S7-300/400 CPU supporting the PROFINET interface.

Free one-hour-use server software and manuals from web: www.klinkmann.com

Wonderware Application Server, any OPC, SuiteLink or DDE Client
S7 PROFINET Server
PROFINET CBA Runtime Interface
PROFINET
Siemens S7-300
Siemens S7-400
Features

Faster communication speed if compared with other Ethernet based software used for communication with Siemens S7 controllers: usually about 15 milliseconds read (polling) cycle is needed to read 1400 consecutive bytes and about 45 milliseconds read (polling) cycle is needed to read 3999 consecutive bytes.

The S7 PROFINET Server requires the PROFINET communication support is added to S7 PLC program by using STEP7 programming software: setting a checkbox in S7 CPU configuration, defining that the CPU is used for PROFINET CBA communication and creating a PROFINET interface data block.

The maximum amount of consecutive data accessible from one S7 controller is 3999 bytes, which should start from the beginning of PROFINET interface data block.

The S7 PROFINET Server supports item/point names that are consistent with the addressing and point naming used in Siemens S7 PLCs for accessing the Data Blocks.

The wide range how to interpret the S7 PLC data is supported: bits, bytes, byte arrays (as strings), chars, char arrays (as strings), words, word arrays (as strings), integers (signed, BCD), integer arrays (as strings), double words (unsigned, BCD), double word arrays (as strings), double integers (signed, BCD), double integer arrays (as strings), reals, real arrays (as strings).

Minimizes system message traffic by dynamically calculating and optimizing poll lists for client-requested items/points.

Supports multiple topics for each PLC, allowing different data update rates.

Provides a communication status flag for each topic. Supports standard DDE among multiple applications.

The S7 PROFINET Server “SuiteLink and DDE” version is developed by using Wonderware I/O Server Toolkit ver. 7,2,1,6. The FastDDE (Version 2) and DDE support for “OPC & DDE” version is implemented by Wonderware I/O Server Toolkit ver. 5.0 (008).

Ordering Information

Description / Order Number

S7 PROFINET SuiteLink and DDE Server / DR59010

S7 PROFINET OPC and DDE Server / DR59011
Event DAServer and DI Object

Unsolicited fast and optimal event driven data exchange between Wonderware Application Server and PLCs

Event DAServer and DI Object ("Event Driver") provides fast event driven communication between Wonderware Application Server or any OPC/SuiteLink/DDE Client and PLCs, supporting unsolicited data exchange.

The special “Event Protocol Message Types” are developed and used as a base for development of generic “message protocol”, allowing bi-directional data transfer between HMI systems and PLCs. All communication is event driven and optimized for maximum performance, the polling of data from PLCs is not used.

The “Event Driver” also provides an object oriented item naming structure (“object.index”), what is independent from the device, so no changes are needed if PLC type is changed.

The “Event Driver” allows for large amount of data points to be monitored (in high resolution down to millisecond level) without the performance aspects of massive polling - as PLC is sending data only when value is changed. Such event driven communication security is same as for polling (watchdog “heartbeat” functionality is included).

There are following interfaces used in “Event Driver” application:

To use the “Event Driver”, appropriate additions/modifications are needed in the PLC program in purpose to support the unsolicited sending/receiving and encoding/decoding of “blocks” with raw data.

Free one-hour-use server software and manuals from web: www.klinkmann.com
Main advantages of “Event Driver” concept if compared with usual Wonderware DI (Device Integration) Servers

**Data acquisition method**

“Event Driver” – event based one direction data “pushing” between communication partners, the communication integrity is enforced by “heartbeat” mechanism.

Wonderware DI Servers – polling of data, full read-response cycle is required.

“Event Driver” advantages: higher performance for exchanging large amount of data; only changed data is transferred.

**Object oriented communication**

“Event Driver” – the communication is object oriented: one object component is located at PLC side and matching object component is located at HMI side. Data hidden in the object (information hiding) is transmitted to the partner object through the send and receive buffers.

Wonderware DI Servers – communication is protocol dependant.

“Event Driver” advantage: object oriented communication supported.

**Structure of communication data**

“Event Driver” – communication with devices is performed using two buffers: one buffer contains messages to be sent to the communication partner and another buffer contains messages received from the partner:

- **Receive buffer**
  - Message
  - Message
  - Message

- **Send buffer**
  - Message
  - Message
  - Message

- **Event Driver**

- **PLC**
  - Message
  - Message
  - Message

- **Receive buffer**

Using send and receive buffers requires only 3 items at HMI side to enable communications: one item for each buffer and one additional item for “pushing” data from HMI to device.

Wonderware DI Servers – great number of separate items required at HMI side.

“Event Driver” advantage: reduced number of items needed for communications.

**Item naming**

“Event Driver” – unified independent from hardware “object.index” item naming system is used.

Wonderware DI Servers – item naming depends on hardware.

“Event Driver” advantage: possible easy “self” configuration of object references, as the item name structure is also object based (“object. index”) instead of absolute referencing (e.g. DB100:16.2); this is very useful, for example, when building Wonderware Application Server template libraries.

**Real Time communication data database**

“Event Driver” – a real time database is maintained where all current values are stored and the clients of the “Event Driver” are supplied with values from this database.

The real time database is still kept and contains the latest fresh data received from PLCs even some items are deactivated by “Event Driver” clients.

Wonderware DI Servers – deactivation of items causes no more polling for these data.

“Event Driver” advantage: always the latest fresh data received from PLCs is available.

**Timestamps**

“Event Driver” – resolution till millisecond and real PLC timestamps are supported for all data received from devices.

Wonderware DI Servers – real PLC timestamps very often not supported and computer time used in VTQs (Value Time Quality) provided to clients.

“Event Driver” advantage: real timestamps from devices supported.

**Time synchronization**

“Event Driver” – support of timestamps till millisecond resolution for data “pushed” to devices.

Wonderware DI Servers – time synchronization with PLCs supported very rarely and only by using special time synchronization items.

“Event Driver” advantage: time synchronization with PLCs supported.
Features

Faster communication speed if compared with usual polling systems, huge amount of data can be received and sent at once.

The “Event Driver” application supports unsolicited communication with PLCs and transfer of “blocks” with raw data from/to the PLC, and Wonderware Application Server or any SuiteLink/DDE Client. All communication is event driven and the polling of data from PLCs is not used.

The special “Event Protocol Message Types” are developed and used as a base for development of generic “message protocol”, allowing bi-directional data transfer between HMI systems and PLCs.

All data received from PLC includes PLC timestamps with one millisecond resolution supported as default.

For Event Driver “DAServer & DI Object” part the special item naming system is used, based on “Message Type”, “Object ID” and “Index” parameters defined in “Event Protocol Message Types”. As well additional system items are used for “DAServer & DI Object” part to implement the “Event Protocol” system messages – for example, for time synchronization, system reset, etc.

The Event Driver “OPC Client” part communication with corresponding OPC Server is based on “block” type OPC items provided by OPC Server – for each PLC one Read-Only “block item” (receive buffer) and one Write-Only “block item” (send buffer) are used, the contents of these “block items” are decoded/encoded by “Event Driver” according to “Event Protocol Message Types”. For Write-Only “block items” (send buffers) the OPC asynchronous writes are used.

The Event Driver “DAServer & DI Object” part is developed by using Wonderware ArchestrA Data Access Server Toolkit 1.0 SP2 and Wonderware ArchestrA Object Toolkit 1.0.

The Event Driver delivery package consists of Event Driver DAServer installation package, DI Object installation package and the user manual.

Ordering Information

Description / Order Number

Event DAServer and DI Object / DR58010