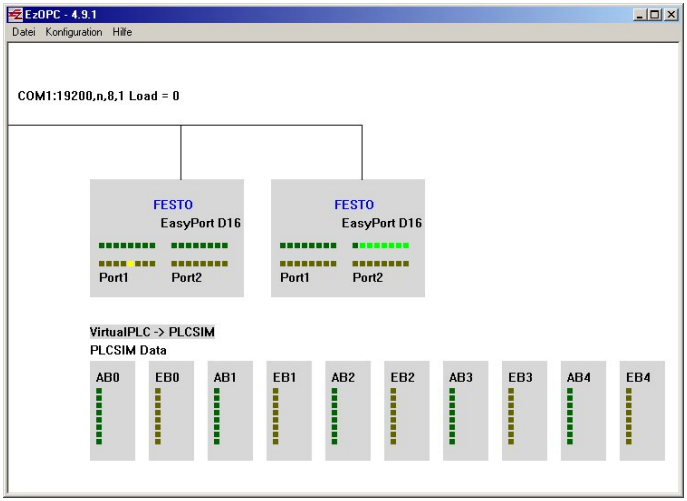
FESTO

EzOPC 4

Handbuch
Manual



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Manual EzOPC

What is the purpose of EzOPC?

EzOPC is an OPC server which provides two data links:

- To an “EasyPort EA module Baugruppe” from Festo Didactic
- To a “STEP 7 Simulator” from Siemens PLCSIM5.1 or higher.

The data can be written and read by any OPC 2x-compliant OPC client.

What is OPC?

OPC stands for **open connectivity via open standards** and is an established standard interface in the field of automation technology. It ensures an efficient flow of data between Windows applications and automation devices.

OPC defines interfaces and interoperability between applications and communication systems from different manufacturers. This enables tasks such as visualisation, measurement data acquisition or control functions to be carried out irrespective of the makes of equipment involved. OPC is thus an open standard which is not tied to any specific application.

Note

Further information is also available at http://www.opcfoundation.org

Requirements

Computer requirements

- Microsoft 32-bit operating system 98, ME, NT, 2000, XP
- 128 MB main memory
- CPU with at least 300 MHz
- 1 RS232 interface

For communication with an external hardware unit: EasyPort interface

- 1 EasyPort D16 (order no. 167 121) or DA (order no. 193 930)
- 1 serial connecting cable (1:1) (order no. 162 305)
- 1 external 24 V voltage supply

For communication with PLCSIM:

- 1 STEP 7 basic package, version 5.x
- 1 STEP 7 PLCSIM version 5.1 or 5.2

Installation

- You require administrator rights in order to install EzOPC
- You can download EzOPC from the internet as EzOPC._setup491.exe at http://www.festo.de/didactic.
- Follow the installation instructions.
- The set-up installs the EzOPC application and the necessary OPC driver components.

Configuration

After installing the software, you must configure the communication parameters and the components in your system. Begin this procedure in the EzOPC start menu.

Figure 1: EzOPC start menu

- You only need to start EzOPC manually in order to configure the communication parameters and the individual components of your system.
- The EzOPC will subsequently be started automatically when an OPC link is established.

Configuration
Serial interface

If you wish to connect a hardware component to the PC, you will require at least one EasyPort. The EasyPort is connected to the PC via the serial interface. To carry out the necessary configuration, select the menu **Config → Serial interface**.

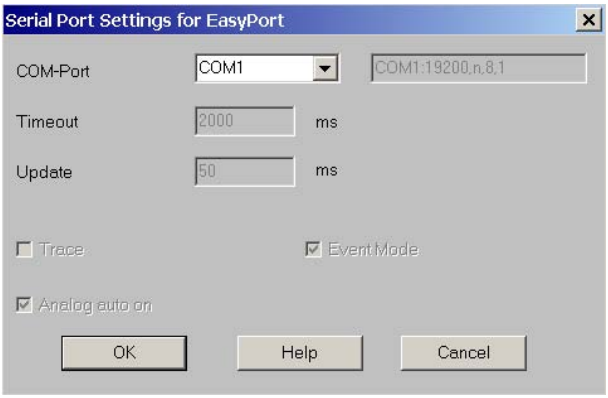

Figure 2: Serial Port Settings

In this dialogue box you can define the interface to which the EasyPort is to be connected.

The grey fields are for information purposes only, and can only be altered by a member of Festo Didactic's support personnel, if necessary.

Configuration of EasyPort

You can communicate with various server components. To this end, you must configure communications with these components. Start EzOPC and select the menu **Config → Communication setup**

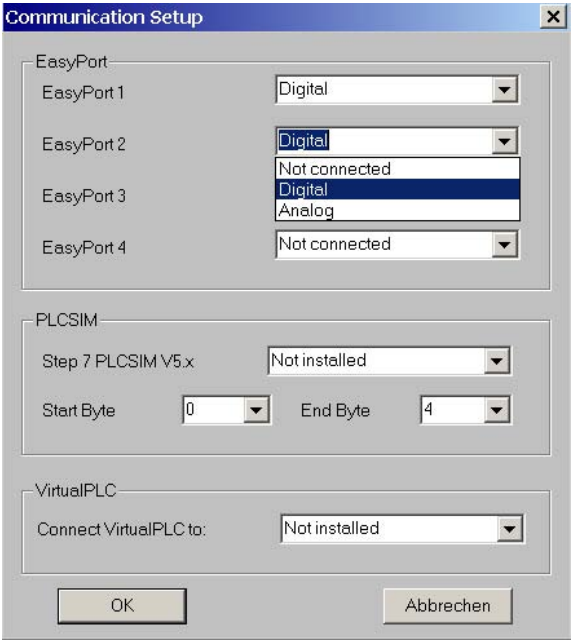

Figure 3: Communication Setup

In the **EasyPort** section you define which type of EasyPort (digital, analogue) and how many EasyPorts are to be connected.

The figure below shows an example configuration with an EasyPort.

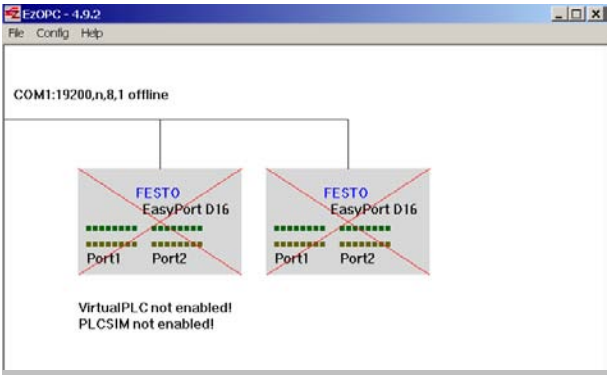

Figure 4: Example configuration

The top line shows the serial interface configuration. The status **offline** indicates that you have not yet established a connection to EasyPort.

A graphic presentation of the configured EasyPorts in symbolic form appears below this information. Two EasyPorts are configured in the example shown in Figure 4, whereby the second EasyPort is an analogue EasyPort with 8 digital inputs and outputs. The fields which are crossed out in red indicate that you have not yet established a connection to these devices.

There are two other components with which communication is possible via EzOPC - the **virtual PLC** and the SOFT **PLCSIM** from Siemens.

The text underneath the EasyPort symbol fields denotes that neither of the components has been configured.

Note

EasyPort may only be installed if an EasyPort is actually to be connected to the PC, otherwise you will receive a communication error message in real operation.

Configuration of PLCSIM

To configure this device, select the menu **Config → Communication setup** once again.

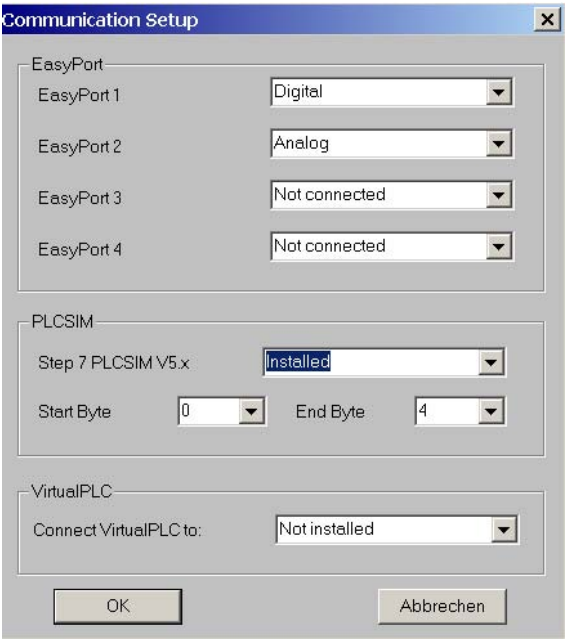

Figure 5: Configuration of PLCSIM

In the **PLCSIM** section, first select the **installed** option for the component **STEP 7 PLCSIMV5.x**. As a further configuration option you can define the **start byte** and **end byte** in the SOFT PLC. In this way, you can optimise communications according to your requirements. Otherwise, all data bytes would be transmitted in all communications.

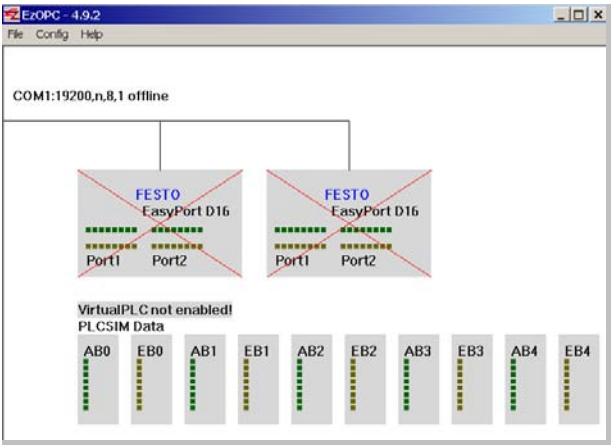

Figure 6: Example PLCSIM configuration

The above example shows a graphic display of the configured bytes from 0 to 4. This display is dynamic, i.e. the appropriate LEDs are activated when communication takes place. This provides you with a visualisation of communications at this level, too.

Note

The PLCSIM component may only be activated when the STEP 7 software is installed with PLCSIM. Otherwise you will receive a communication error message and will have to restart EzOPC.

Configuration of VirtualPLC

The virtual PLC only requires to be configured if you wish to control hardware via the Soft PLCSIM or work with the COSIMIR® PLC from Festo Didactic.

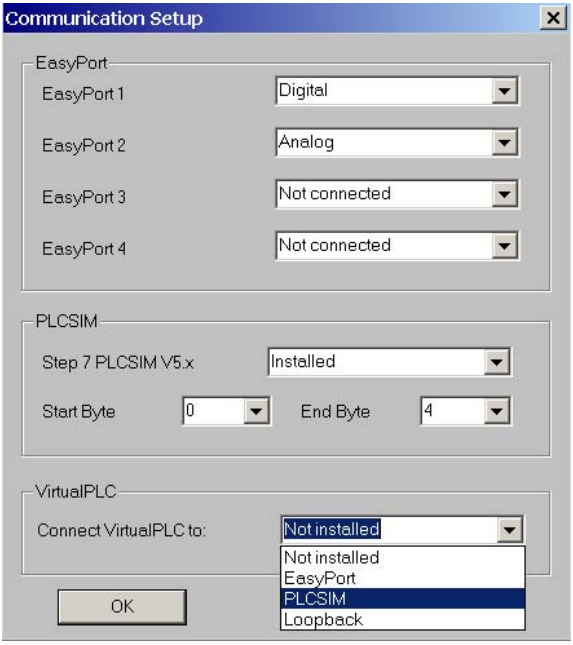

Figure 7: Communication Setup for VirtualPLC

Various configuration options are available:

- EasyPort
- PLCSIM
- Loopback

Configuration of VirtualPLC/EasyPort

If you wish to use the PLCSIM to control an MPS station from Festo Didactic, for example, you must wire up the station to EasyPort and

configure EasyPort accordingly as stated above. PLCSIM must also be configured. However, as PLCSIM constitutes a server component, an active client component is required to control communications. This function is performed by the VirtualPLC component.

Select the **EasyPort** option in the above configuration window, cf. Figure 7.

Configuration of VirtualPLC/PLCSIM

If you wish to control a process model in COSIMIR® PLC with PLCSIM, configure the VirtualPLC via the PLCSIM option. The virtual PLC maps the fixed input and output model of a process model in COSIMIR® PLC onto any input and output model of the PLCSIM.

Configuration of VirtualPLC/Loopback

If you wish to interconnect two Windows applications such as FluidSIM® und COSIMIR® PLC, each of which is able to communicate via a CPC client, you will require a server to implement the requests from the two clients. Once again, the VirtualPLC component can perform this server function. To this end, select the **Loopback** option in the configuration dialogue window, cf. Figure 7.

Configuration of language setting

Select the menu **Config → Language**. Here you can switch EzOPC to a different language. German and English are the only languages which are available at present. The selected language will be active after restarting EzOPC.

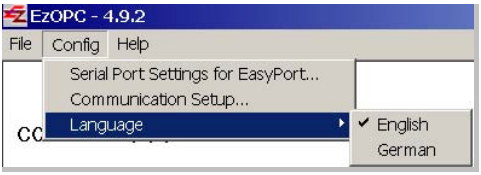

Figure 8: Language configuration

Examples

Standard OPC client

The procedure for establishing an OPC connection is presented below by reference to the example of the **standard OPC client** from the **FactorySoft** company.

Depending on the degree of integration, some steps may be concealed in other applications and/or automated.

The **standard OPC client** from FactorySoft is installed automatically with EzOPC for test purposes.

- Start the OPC client.
- Now select the menu **OPC → Connect**.

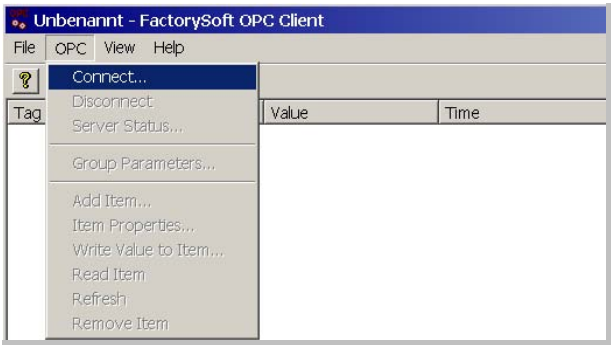

Figure 9: Establishing a connection with the EzOPC server

- The **Available servers** section lists all the OPC servers which are installed on your system. The EzOPC server is called FestoDidactic.EzOPC.1. After selecting this server via a mouse click, its name will appear in the **Server Name** data field.

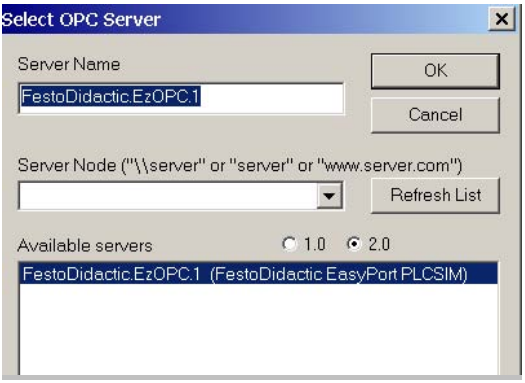

Figure 10: Server selection

- Confirm your selection by clicking on the **OK** button. EzOPC will now be started automatically. After the connection to the EzOPC server has been established, the menu of the OPC client will alter as follows:

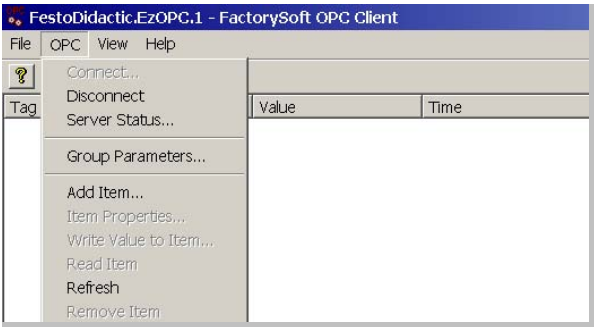

Figure 11: OPC client menu after establishing connection

- You now need to inform the client as to what data is to be communicated with the server. In OPC language, such a communication element is referred to as an **item**. Now add an item via the menu **OPC → Add Item**.

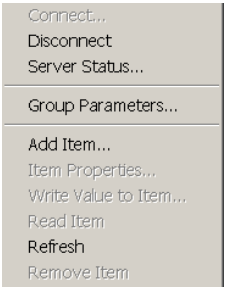

Figure 12: Options for the display of communication variables

In the following example, InputPort 1 of EasyPort1 has been selected.

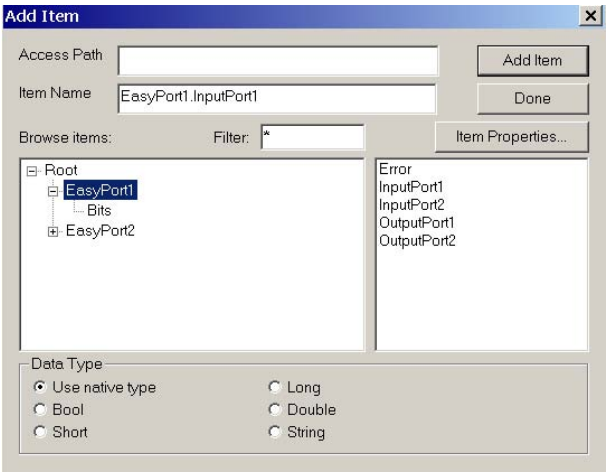

Figure 13: Display of communication variables – Item

Select **InputPort1** and click on **Add Item** to display the data value of **InputPort1**. If you wish to display only specific bit values of EasyPort1, click on **Bits** in the left area of the window, whereupon the following display will appear:

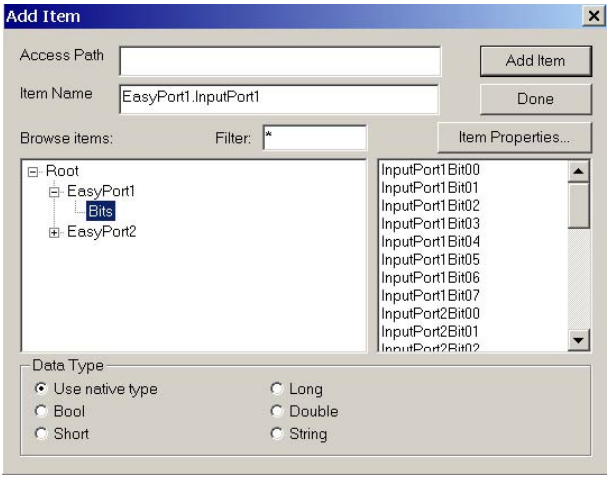

Figure 14: Display of bit variables

Examples:
FluidSIM®/EasyPort

Two general applications are available with FluidSIM® and EasyPort:

- You wish to control a simulated circuit via an external PLC.
- You wish to control a real electrical pneumatic circuit with the FluidSIM® logic module.
- You require FluidSIM® version 3.6f or higher.

Control with external PLC

Wire the PLC up to the EasyPort and connect the EasyPort to the PC. Configure EzOPC with the EasyPort component and close EzOPC. Start FluidSIM® and open the desired circuit. Activate OPC communications in FluidSIM® and, in graphic mode, connect the components FluidSIM® IN and FluidSIM® OUT to the corresponding ports of EasyPort. EzOPC will then be started automatically. Start the programme in the PLC and communications will be effected after starting the simulation in FluidSIM®.

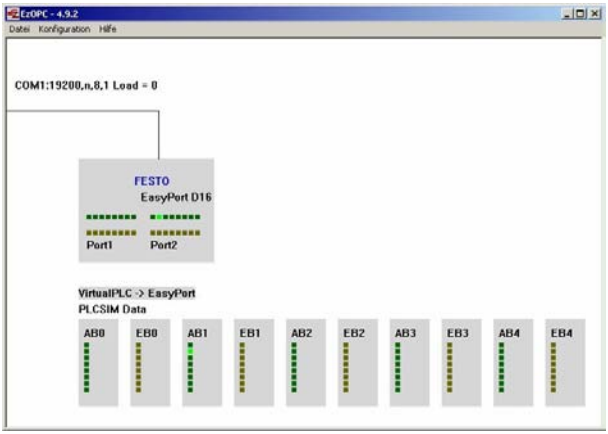

Figure 15: Active connection to EasyPort

Load = 0 indicates the current workload of the serial interface. In this example the value is 0, indicating a capacity utilisation of 0 %. Should this value exceed 90, it will no longer be possible to update the inputs and outputs in real time, as the maximum data volume for the serial interface is exceeded at this point.

Control with FluidSIM®

It is sufficient to configure EasyPort in EzOPC once again. Select a logic module in FluidSIM® and connect it to the corresponding ports of EasyPort according to the same procedure as described above.

Examples:
FluidSIM®/PLCSIM

If you wish to control a circuit in FluidSIM® via the Soft PLCSIM, the configuration of the EzOPC must be as follows:

- EasyPort not installed
- PLCSIM installed and start and end byte defined
- VirtualPLC not installed

Configure OPC communications in FluidSIM®, start the simulation and start your programme in the PLCSIM.

Examples:
EasyPort/PLCSIM

To control an MPS system with the Soft PLCSIM, wire the MPS station up to the EasyPort via Syslink cable and connect the EasyPort to the PC. The EzOPC configuration must then be as follows:

- EasyPort installed
- PLCSIM installed and start and end byte defined
- VirtualPLC not installed

No communication can take place yet, as PLCSIM is a server component. To enable communications, start the FdEzPlc application, which is also installed with EzOPC:

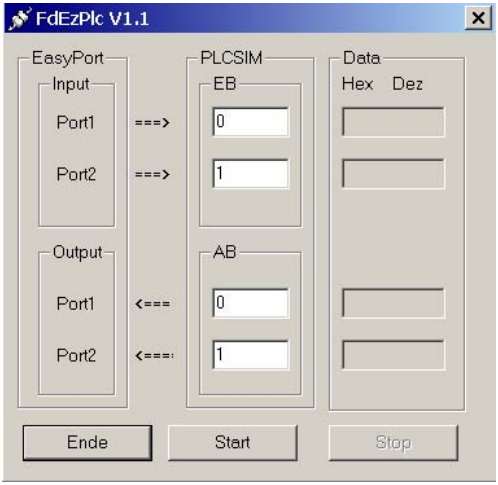

Figure 16: Configuration of the FdEzPlc client

Define which bytes of the PLCSIM are to be connected to the corresponding ports of the EasyPort. Click on start to initiate communications.

Examples:
COSIMIR® PLC/PLCSIM

If you wish to control a process model in COSIMIR® PLC via the Soft PLCSIM, the EzOPC configuration must be as follows:

- EasyPort not installed
- PLCSIM installed and start and end byte defined
- VirtualPLC configured with **PLCSIM**

Start the simulation of the process model and the programme in PLCSIM.

Examples:
COSIMIR® PLC/FluidSIM®

If you wish to control a process model in COSIMIR® PLC via the logic module in FluidSIM® , the EzOPC configuration must be as follows:

- EasyPort not installed
- PLCSIM installed and start and end byte defined
- VirtualPLC configured with **Loopback**

When implementing this communication mode, it is to be ensured that the outputs of the process model are mapped onto the inputs of FluidSIM® and vice-versa.