

# C-BUS OPC Server - Quick Start

The following sections describe how to use the supplied **KZK** OPC Server. The OPC Server's functionality can be divided into the **configuration & installation part** and the **on-line part** described in the following sections.

## Configuration of *Hardware*

The OPC Server requires the Intelligent External Converter (IEC) for the physical connection to the C-BUS media layer. The IEC is a microprocessor-based single chip device, and the manual configuration by jumpers and DIP switches is required only if you install the Lantronix CoBox module for Ethernet connections between the OPC Server and the IEC. All other configuration steps can be made by software tools and utilities (e.g. changing a C-BUS address for the IEC or assigning an IP address to the IEC with the installed Ethernet sub-module).

### Step 1: IEC Connection and Mounting

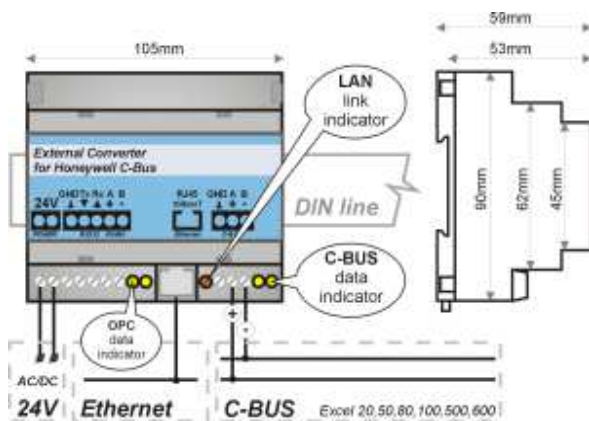


Figure 1: Wiring diagram for IEC Converter

The LAN link indicator lights **green** to indicate 10/100 Mbps Ethernet connection.

The LAN link indicator lights or blinks **red** (except the start-up procedure) to indicate error detection in the configuration of the Ethernet sub-module.

**Note:** The IEC supports C-BUS speeds of 4.800, 9.600, 19.200, 38.400, 76.800 bps and Ethernet speeds of 10/100 Mbps.

### Step 2: Assigning an IP address to IEC

If you have not installed the Ethernet sub-module, please skip this step.

If you wish to install the Ethernet sub-module, please proceed to the additional section: Installation of the Ethernet sub-module.

The IEC is shipped with the default IP address: **192.168.1.254**

For changing the default IP address, use the **UDSIP** utility from the installation FLASH.

Click Run from the Windows Start menu and type the following command line **X:\LAN\LANTRONIX\UDSIP** where **X** is your FLASH drive letter.

To secure the connection of your Intelligent External Converter (IEC), follow the instructions below:

1. Connect the IEC to the C-BUS (RS485) through a two-wire circuit.
2. (If you have installed the Ethernet sub-module, you can skip this step.) Connect the IEC to the PC (Personal Computer) through RS232 or RS485. For long distance between the IEC and PC you can use RS485 interface but you have to use RS485 to RS232 converter with ADDC.
3. (If you have not installed the Ethernet sub-module, you can skip this step.) Connect the IEC to the network using Hub or Switch through the Ethernet port (The IEC must be on the same network segment as your PC with the installed C-BUS OPC Server).
4. Plug the IEC in the power supply (24V DC or equivalent AC voltage). The required input voltage is 10-25V. Find Power Supply Wiring of IEC.

In order to successfully assign an IP address to the IEC using the UDSIP utility, you must use the address that is on the same subnet as the computer that you are using. To get the IP address of your computer, use the command '**ipconfig**'.

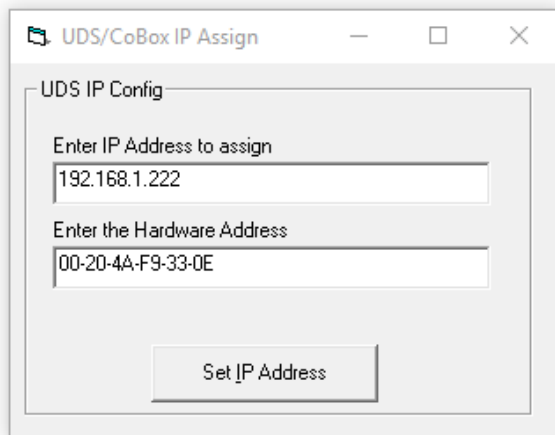


Figure 2: The UDSIP utility dialog box

To assign a new IP address to your IEC, follow the instructions below:

1. In the 'Enter IP Address to assign' field, type the IP address of the IEC (XXX.XXX.XXX.XXX format).

In the 'Enter the Hardware Address' field, type the Ethernet address (MAC address) listed on the IEC label (on the right side of the IEC).

2. Click on the 'Set IP Address' button, and USDIP will attempt to assign the new IP address.

To check the assigned IP address to the IEC, use ping utility.

In the command prompt, type the following command '**ping XXX.XXX.XXX.XXX**', where XXX.XXX.XXX.XXX is the IP address of IEC. The **Reply received** message indicates that the new IP address has been assigned successfully.

**Note:** Before assigning an IP address to the IEC please check, using the ping utility, whether this IP address has not been used by another device.

You can also change the IP address, mask and default gateway by entering the IP address of the IEC Converter in your Internet browser.

The following Internet browsers are supported: Google Chrome, Firefox, Opera, Microsoft Edge, or Internet Explorer in compatibility mode.

Go to **Network** and change the **IP configuration** and click on **Apply Settings**.

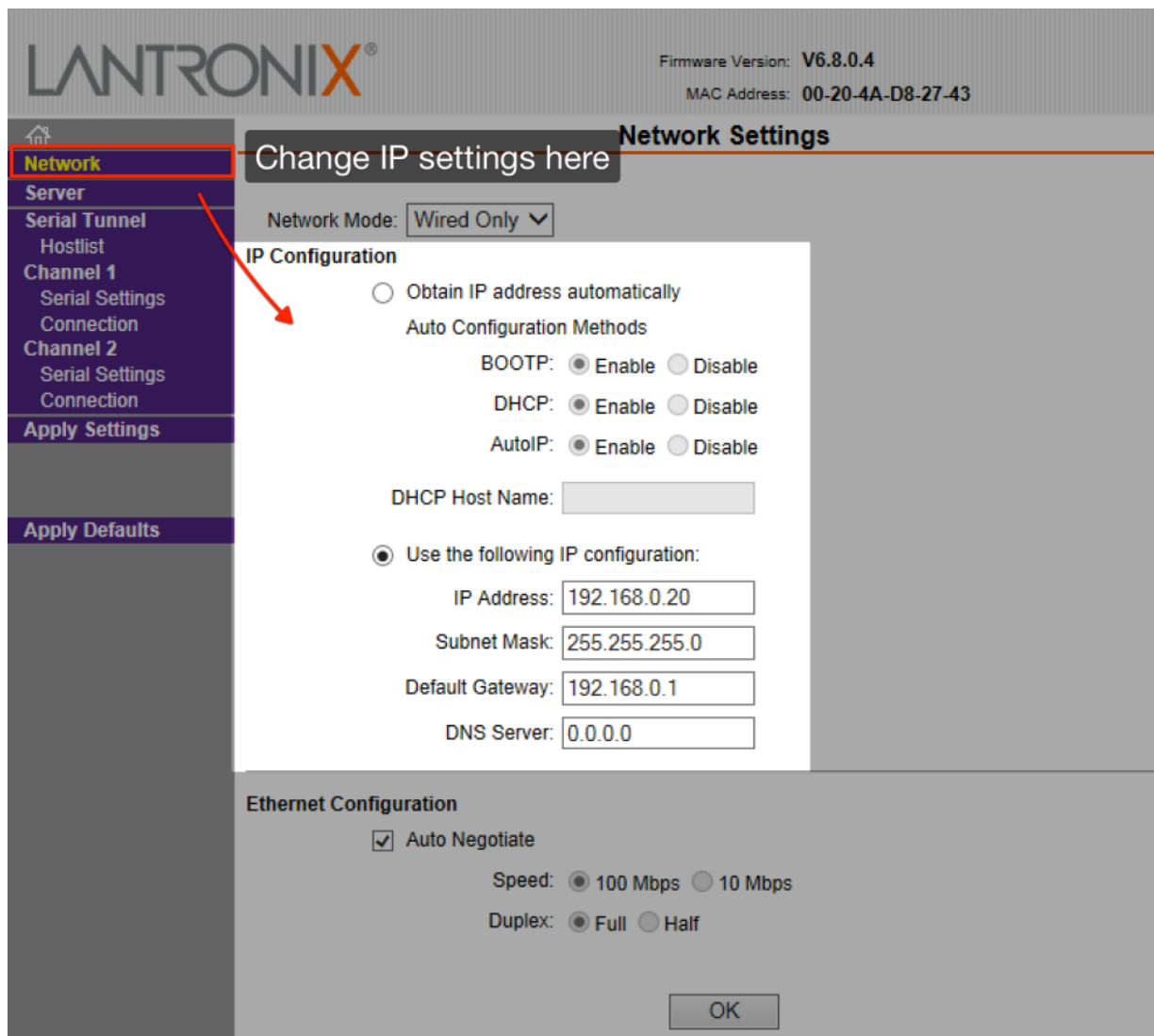


Figure 3: Changing the IEC converter network settings using an Internet browser

Change only the network settings (IP address, mask and default gateway).

**Do not change any other values as this may cause a malfunctioning IEC Converter!!!**

### Step 3: Installation of the C-BUS OPC Server

To install the C-BUS OPC Server, follow the instructions below:

1. Insert the installation FLASH DRIVE into your USB port.
2. Select your language.
3. Click on the Installation of OPC Server.
4. Respond to the installation prompts.

**Note:** If the installation does not launch automatically, click on the Windows Start and select Run. In the Open field, enter the following command line **X:\AUTORUN**, where **X** is your FLASH drive letter.

### Configuration of Software

The configuration of the OPC Server is performed by parametric files (\*.par, but .par extension is not necessary; a file name without extension may be used as well) and the configuration file **OPC.CFG** (OPC.CFG is the required name).

The configuration of the ActiveX Control for Editing Time Programs is performed by the default configuration file **CbusControl.cfg** or by the configuration file that is specified by **CbusConfigurationFileName** parameter of ActiveX Control.

The parametric and configuration files are simple text files, and they can be edited by standard text editors (for example using Notepad).

The parametric and configuration files are located in the installation directory where the OPC Server is installed.

### Step 4: Building a Parametric File

You can build a parametric file using a text editor or you can generate a parametric file using the Excel spreadsheet. It is simpler for projects with more data points to generate parametric files by Microsoft Excel.

You can build a configuration file by copying a text from the Excel spreadsheet to the Clipboard and pasting the selected text into the Notepad editor. The latter step saves the text in the notepad as filename.par – a parametric file.

You can also save the parametric file directly from the Excel spreadsheet as *Formatted text* (separated by gaps)(\* .prn) and type in the file name and extension .par (.par extension is not necessary). You can use a different extension or file name without the extension, but you must insert the correct name of the parametric file into the OPC.CFG configuration file in order to secure the correct functioning of the OPC server. In this way you can use different parametric files for several C-BUS networks.

The OPC Server supports the following types of data points in the definition of the parametric file:

- Analog Input / Output
- Digital Input / Output
- Pseudo Analog (Virtual)
- Pseudo Digital (Virtual)
- Pulse
- Totalizer

**Warning:** Never use these system data points:  
**EXECUTING\_STOPPED**  
**SHUTDOWN**  
**STARTUP**

**This is an example of a parametric file for the C-BUS OPC Server:**

```

BEGIN                ;Semicolon is used for comments
PARAM_FILE_TYPE     -2    ;Simulation/OnLine mode [-2/2]
;COM_PORT           COM1  ;COM port [COM1-COM255]
DEST_ADDR           192.168.1.254;destination IP address of IEC Converter
DEST_PORT           14001 ;destination TCP port (in Cobox format)
BAUD_RATE           9600  ;Baud rate
  BAUD_RATE         - it is the communication speed between IEC and OPC Server
DRIVER_ADDR         31    ;Address of the driver (for internal use)
ADDR_MODE           NO    ;Turn On/Off the addressing mode in communication
                        between IEC units and OPC Server [YES/NO]
                        It is necessary to switch this parameter to YES only
                        when you need to connect more IEC units via RS-485
POOLING_MODE        NO    ;Turn On/Off the event-based communication between
                        IEC units and Excel controllers. It is necessary to
                        switch this parameter to YES when you need pooling-
                        based communication between the IEC units and Excel
                        controllers but don't forget obtaining values of all
                        defined data points will be perform only by pooling!
                        Note: the IEC's firmware 2.32 or higher is required
                        for using this feature!!!
IMMEDIATE_WRITING   NO    ;Turn On/Off immediate writing of data point's value
                        without feedback control (reading after writing)!
PLC_TIME_SYNC       YES   ;Turn On/Off time and date synchronization of Excel
                        controllers with PC where is C-Bus OPC Server running
TIMEOUT             5000  ;Timeout of the C-BUS station [ms]
  TIMEOUT           - the TIMEOUT parameter depends on the number of Excel
                        controllers on the C-BUS, and the following values are
                        recommended:
                        5000 up to five controllers on the C-BUS
                        10000 up to ten controllers on the C-BUS
                        15000 above ten controllers on the C-BUS
IDLE_PERIOD         0     ;Delay between obtaining values of data points [ms]
REPEAT_COUNT        2     ;Maximum number of attempts for receiving the value of
                        data points from C-BUS network
TCP_PORT            5001  ;TCP port for connecting the ActiveX component for
                        editing Time Programs
ERR_LOGGING         NO    ;Not used (only for compatibility)
ERR_LOGGING_FILE    C:\Alarms.log ;Not used (only for compatibility)
box 1 29 IEC1       ;Keyword, ID, C-BUS address, C-BUS name
  box               - Keyword
  1                 - ID of the IEC (the ID number is used only if you need several
                        IECs on the same COM port, but this method of connecting
                        several IECs to one OPC Server is slower than using several
                        parametric files for different COM ports supported by a
                        Multiport serial card or Ethernet virtual COM ports). Note:
                        when you need to connect more IEC units via RS-485 to one
                        OPC Server each IEC unit needs separate box ID identifier!
  29                - C-BUS address of the IEC [1-30]
  IEC1              - C-BUS name of the IEC

```

<b>A</b>	<b>1</b>	<b>Analog01</b>	<b>12 #Alias</b>
A		-	type of data point <A - Analogue, B - Binary, M - Multistate>
1		-	ID of the IEC that receives the value of the data point {the ID number is defined in the box section}
Analog01		-	the name of the data point (also known as the "user address") is an 18 character <b>case-sensitive</b> ASCII string
12		-	the C-BUS address of the Excel controller where the data point is located, the C-BUS address must be within the range of 2 to 30 as the C-BUS address number 1 is reserved for the CSS (Communication System Server) device and Honeywell's graphics central XBS-i
#Alias		-	data point placeholder (alias name) to be used instead of the real data point name, such as #Outside_Temperature

**END.**

All the configuration parameters and the mapping of data points are inserted between the keywords BEGIN and END.

The primary key for a data point is based on its correct name (user address).

You can find the correct names of data points in the CARE Printout Tool, XI584 terminal, XI581/XI582 terminals or the XL50 MMI panel.

**Note:** Before assigning this C-BUS address to the IEC please check, using the **Show All Devices** option in an Excel terminal or panel menu, whether this C-BUS address has not been used by another C-BUS device.

### Step 5: Building the Configuration File OPC.CFG

The OPC.CFG file is used for loading more parametric files for several C-BUS networks via a multiple COM port supply with the corresponding number of the IEC.

#### **This is an example of a configuration file for the C-BUS OPC Server:**

```

BEGIN
APPLICATION_WINDOW NO ;Show/Hide application window of OPC Server
PROPERTIES YES ;If you set this parameter to NO the C-BUS OPC Server
will generate additional OPC Items (using _Mode and _InAlarm suffix)
for Mode and InAlarm attributes instead of using OPC Item's properties!
HVAC ;Parametric file for COM1 (IEC via serial COM port)
XL500.par ;Parametric file for COM2 (IEC via serial COM port)
Config.par ;Parametric file for COM3 (IEC via Ethernet TCP/IP)
END.
```

The list of parametric files is inserted between the keywords BEGIN and END.

You can also show and hide the application window of the OPC Server by using the APPLICATION\_WINDOW parameter.

If you have the OPC Server with one IEC (KIT version), you will need to insert only one name of the parametric file into the OPC.CFG configuration file.

**Note:** Please check the list of parametric files in the **OPC.CFG** configuration file for the correct use by the OPC server.

### Step 6: Building the Configuration File CbusControl.cfg

The CbusControl.cfg file is used for assigning alternative logical names to controllers and devices that are displayed in ActiveX Control for editing the Time Programs dialog in browsing Stations on the C-BUS.

The Time Programs implement a controlling strategy for changing the values of data points depending on time sequences. The Time Programs are stored in Excel controllers. An Excel controller can have the maximum of 20 Time Programs.

**This is an example of a configuration file for ActiveX Control:**

```
1 CSS
  1 - number of the C-BUS address of the controller or device
  CSS - text of an alternative logical name
2 IEC
3 BNA
4 XBS
5 EBI
10 XL50
11 XL500
12 XM100
```

Unless this file exists, the default name of Station X is used as in XBS or XI584 software (where X is the C-BUS address of the station).

If you will need to connect the ActiveX Control to more C-Bus networks via one C-Bus OPC Server and more IEC units you have to use corresponding configuration files for each C-Bus network by **CbusConfigurationFileName** parameter of ActiveX Control.

The ActiveX Control can load local or remote configuration file.

The ActiveX Control loads the local configuration file from directory where the C-Bus OPC Server is installed.

The ActiveX Control loads the remote configuration file via network from computer where the C-Bus OPC Server is installed. The remote configuration files are also stored in installation directory of C-Bus OPC Server. The name of remote configuration file has following syntax: **parametric\_file\_name + box\_ID.cfg** (e.g. remote configuration files `cbus11.cfg` and `cbus11.cfg` belongs to parametric files `cbus1.par` and `cbus2.par` in case of using value 1 for box ID definition in box section of both parametric files).

Here is description of loading rules of ActiveX Control's configuration file:

1. If you don't use parameter "CbusConfigurationFileName" the ActiveX Control tries to load default configuration file `CbusControl.cfg`. If this local configuration file doesn't exist the ActiveX Control tries to load the remote configuration file from computer where the C-Bus OPC Server is installed. If the remote configuration file doesn't exist the ActiveX Control will not use any configuration file with logical names of Excel controllers and other C-Bus devices.
2. If you specify the configuration file name by using "CbusConfigurationFileName" parameter the ActiveX Control tries to load the this local configuration file. If this local configuration file doesn't exist the ActiveX Control tries to load the remote configuration file from computer where the C-Bus OPC Server is installed. If the remote configuration file doesn't exist the ActiveX Control will not use any configuration file with logical names of Excel controllers and other C-Bus devices.

**Note:** *If the default configuration file **CbusControl.cfg** exists in installation directory of C-Bus OPC Server the ActiveX Control always uses this local configuration file instead of using the remote configuration file!*

## Step 7: Using ActiveX Control for editing Time Programs

ActiveX Control is included in the installation of the OPC Server and it communicates with the OPC Server via TCP/IP (it may be necessary to allow TCP port in Firewall). You can install ActiveX Control in a different location to the one where the OPC Server is running, usually on PCs where there is an OPC Client and where the ability to change Time Programs across the network is required.

### **This is an example of using ActiveX Control inside the Internet Explorer:**

```
<html>

<head>
<title>CbusControl</title>
</head>

<body>

<p>
<object classid="clsid:A445C0D3-044A-4930-9DA5-EF595E984E75" id="CbusControl"
width="340" height="190">
  <param name="CbusServerPort" value="5001">
    CbusServerPort - the TCP port for connecting to the OPC Server (if you have
    the configuration of the OPC Server with more parametric
    files for different C-BUS networks, you should use
    multiple instances of the ActiveX Control with the
    corresponding TCP ports)
  <param name="CbusServerAddr" value="localhost">
    CbusServerAddr - IP address of the PC where the C-BUS OPC Server is running
  <param name="CbusConfigurationFileName" value="Cbus1Control.cfg">
    CbusConfigurationFileName - the name of configuration file Note: If you don't
    use this parameter the ActiveX Control tries to
    load default configuration file CbusControl.cfg
  <param name="BoxID" value="1">
    BoxID - ID number of the IEC according to the box definition in your
    parametric file. Note: If you don't use this parameter the default
    value 1 is used!
  <param name="RefreshItems" value="true">
    RefreshItems - If you set this parameter to false the ActiveX Control
    doesn't perform the feedback control for changing items in
    Daily schedules. It means if you change any item in Daily
    schedules the ActiveX Control doesn't refresh all items until
    you reopen the Daily schedules dialog box again. Note: If
    don't use this parameter the default value true is used! Tip:
    If you will have any Daily schedules with a lot of items, the
    refresh of all items can take a quite long time after you
    change one of them, so that it is very useful to suppress the
    immediate refresh of all items in Daily schedules when you
    change one of them.
</object>
</p>

</body>
</html>
```



The use of the ActiveX Control is very simple; you only have to set the **CbusServerPort** and the **CbusServerAddr** parameters (described in the previous HTML example) because the ActiveX components use the TCP/IP communication to translate calls between ActiveX Control and the OPC Server. If you want to use the ActiveX Control inside the visualization, your SCADA/HMI system ought to have the support for ActiveX technology. This means that your SCADA/HMI system should contain an ActiveX container for ActiveX Controls. You can establish a connection between ActiveX Control and the OPC Server by the Connect button. You can access the Time Programs that are stored in Excel controllers from multiple PCs, even simultaneously.

If your SCADA/HMI system doesn't support ActiveX technology, you can use the standalone **ActiveX Control Application** to edit Time Programs. The application (ControllApp.exe) is located in the directory where the C-Bus OPC Server is installed. You can also find the application shortcut in C-Bus OPC Server group.

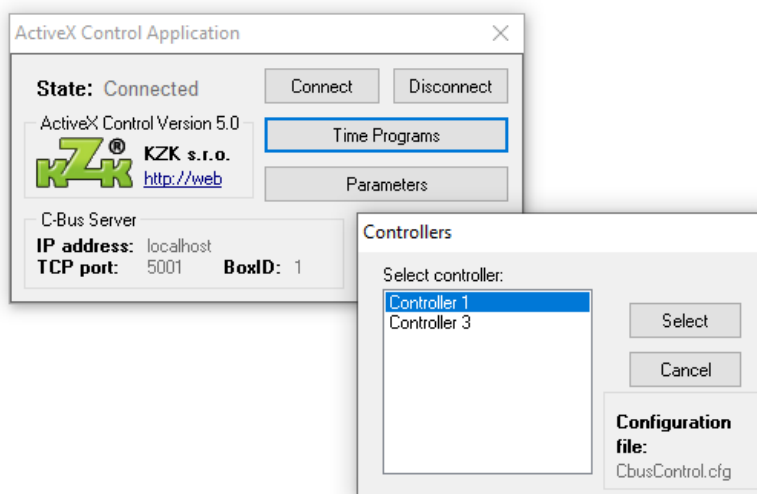


Figure 4: Changing the Time Programs using ActiveX Control Application

**ControllApp.ini** is used to configure of ActiveX Control Application.

**This is an example of configuration file ControlApp.ini**

```
[ControllApp]
CbusServerAddr=localhost
CbusServerPort=5001
CbusConfigurationFileName=CbusControl.cfg
BoxID=1
RefreshItems=1
WindowsDayOfWeek=1
```

The meaning of each parameter is described in the example of using ActiveX Control in Internet Explorer.

If you need to run ActiveX Control Application for different C-Buses, you can specify the configuration file as a parameter when you start **ControllApp.exe**.

**The syntax is as follows:**

```
ControllApp.exe ControllApp1.ini
ControllApp.exe ControllApp2.ini
```

See. also examples of the ControllApp1.cmd and ControllApp2.cmd startup files, which can be found in the installation directory of C-Bus OPC Server.

## Testing and Tuning of the *C-BUS OPC Server on-line*

The name of the OPC server is '**SOFTYON.C-BusDA.1**'. Your OPC Client may ask you to specify this name, but many OPC Clients provide a list of available OPC servers.

The OPC Server will start automatically when the OPC Client requests a connection, and stop immediately after the OPC Client has released its connection. If your OPC Client fails to stop the OPC Server, you can stop the OPC Server by closing the OPC Server application window (by the **APPLICATION\_WINDOW** parameter in OPC.CFG).

The OPC Server checks the syntax of configuration and parametric files. In the event of occurrence of any syntax errors, the error window will be displayed.

The OPC Server provides for system OPC Items by the SystemItems OPC Group. Many of them are extremely useful and you can use them in your OPC Client.

The System Items are described in the following table.

Name of system OPC Items	Descriptions of system OPC Items
CommunicationErrorXX	Indicates a communication error with IEC
CBusOccupationXX	Returns the bit maps of online station on C-BUS bit 1 corresponds to station with the C-BUS address 1 bit 30 corresponds to station with the C-BUS address 30
BusOccupationMapXX	Group of CBusOccupationMap contains ControllerXY binary items with binary map of online station on C-Bus. Where XY is Excel controller number in the range (1-30)
FirstCycleXX	Indicates that the OPC Server tries to obtain all values of defined data points for the first time [initialization]
CurrentPoint	The name of currently processed data point
TcpErrorCode	Returns the result code of the TCP port initialization. If the value of this system items is not equal to zero try to use other TCP_PORT value in your parametric files!
NumberOfNonReadyPointsXX	Number of data points which were impossible to obtain from Excel controllers
FirstNonReadyPointXX	Name of the first data point that was impossible to obtain from Excel controllers
FirmwareVersionXX	Firmware version of IEC
MaxNumberOfPointsXX	Number of maximum data points depends on the purchased license

Where **XX** is ID number of the IEC according to the box definition in your parametric file.

**Attention:** Be sure that you do not exceed the number of maximum data points allowed!

The maximum number of the obtained data points per one IEC is 3.000, but the OPC Server is able to manage more than one IEC; in this way you can obtain up to unlimited number of points.

The OPC Server supports the following Excel controllers: XL20, XL50, XL80, XL100, XL500 and XL800; and it can coexist on C-BUS with Honeywell's graphics centrals XBSi, XBS, XFI, EBI and SymmetrE.

The OPC Server supports following OPC Data Access specifications: 1.0, 2.05 and 3.0.

The OPC Server supports event-base communication with Excel controllers according to following Excel firmware's limitations:

- In Excel's controllers firmware 1.04 and earlier is only the value attribute reports by event-based communication
- In Excel's controllers firmware 1.05 and higher are the value and mode attributes reports by event-based communication

The OPC Server using following OPC Item's qualities:

- GOOD quality – the OPC server has received correct value of data point
- BAD quality – the OPC server has not received yet the initial value of data point
- BAD quality, communication failure – communication has failed and no last known value is available (probably the Excel controller is disconnect from C-Bus)
- BAD quality, last known value – communication has failed but the last known value is available. Item represents the most recent known value of data point

The OPC Server has the ability to change the **Auto/Manual** attributes of obtained data points by the OPC Item property **Item Mode**. The OPC Server has also the ability to report the value of **InAlarm** attribute of obtained data points by the OPC Item property **Item InAlarm**.

If your OPC Client is not able to browse the OPC Item property Item Mode you can try to use access to the OPC Item property Item Mode property by number. For Item Mode property you can use value of 5001 instead of browsing. Here is an example of OPC Item ID addressing: "filename\_par.data\_point\_name#5001" where #5001 signifies Item Mode property. You can also use value of 5002 that represents InAlarm attribute. Here is an example of OPC Item ID addressing for InAlarm attribute of data point: "filename\_par.data\_point\_name#5002".

The C-BUS OPC Server version has support for OPC Client without ability to browse OPC Item properties. For using this feature you have to set configuration parameter "**PROPERTIES NO**" in your OPC.CFG file. After setting this parameter to NO the C-BUS OPC Server will generate additional OPC Items for Mode and InAlarm attributes instead of using OPC Item's properties. Here is an examples of OPC Item ID addressing: "filename\_par.data\_point\_Mode" for Mode attribute and OPC Item ID addressing: "filename\_par.data\_point\_InAlarm" for InAlarm attribute.

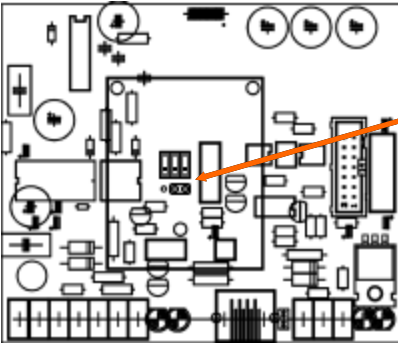
## Troubleshooting in the *C-BUS OPC Server*





Some of the most common problems that people encounter during the configuration and use of the OPC Server are caused by one or more of the following troubles:


- If the Ethernet connection between the OPC Server and IEC doesn't work, please check if the LAN link indicator lights green. If the LAN link indicator lights orange (with plugged patch cable) or it lights red (with unplugged patch cable) then/it does mean that IEC has same IP address as another device on the LAN network.
- If the Ethernet connection between the OPC Server and IEC doesn't work, please try the direct connection between the PC and IEC by a cross Ethernet cable.
- If the Serial connection between the OPC Server and IEC doesn't work, please check the wiring of the RS-232 communication cable connection.
- If the Serial connection between the OPC Server and IEC still doesn't work, please try to use the RS-485 connection by the RS-485 communication cable and the RS-485 to RS-232 converter with ADDC (Automatic Data Detection Control).
- If the RS-485 connection between the OPC Server and IEC still doesn't work, please check the wiring of the RS-485 communication cable connection.
- If the RS-485 connection between the OPC Server and IEC still doesn't work, please try to use another RS-485 to RS-232 converter.
- If the OPC Server is unable to receive the values of data points, please specify the correct C-BUS address of the Excel controllers and the IEC in the parametric file. Check and make sure that the communication speed (9600 bps) in your OPC Server configuration, all Excel controllers and other C-BUS devices (e.g. XM100, Repeaters, etc.) is the same.
- If the OPC Server returns an OPC Item with the "Bad" OPC quality, the data points represented by the OPC Item probably don't exist in the Excel controller; or the Excel controller database was modified; or the Excel controller is switched off; or the data point is not located at the specified C-BUS address of the Excel controller. Check whether the data point name is correct. Remember that data point names are case sensitive!
- In case that your OPC Client is unable to browse the OPC Item property Item Mode, you can try to use accessing the OPC Item property Item Mode property by number. For the Item Mode property you can use the value of 5001 instead of browsing. Here is an example of the OPC Item ID addressing: "XL100C.Analog1#5001", where #5001 signifies the Item Mode property.
- If your OPC Client still cannot communicate with the Item Mode property, please try to use parameter "PROPERTIES NO" in your OPC.CFG file. You can also try another OPC Client. The Softing Demo OPC Client (opc\_dc.exe) may be found in the MISC directory on the installation FLASH DRIVE.
- If event-based communication with Excel controllers doesn't work please check whether the Excel controllers have firmware version at least 1.03 or higher.
- If the communication problems persist, please send the filled-out problem\_report.rtf form to [support@cbusopcserver.com](mailto:support@cbusopcserver.com) and our technical support will do their best to be of assistance to you with all the possible problems. The form may be found in the DOC directory on the installation FLASH DRIVE.

## Installation of Ethernet sub-module

The pictures stated below show the mounting instructions of the Ethernet sub-module.



-  **ON** – DIP position without Ethernet sub-module
-  **OFF** – DIP position with installed Ethernet sub-module
-  **ADDCC** – JP1 Data Control for remote mapped RS-485
-  **RTS** – JP1 Data Control for remote mapped RS-485



Ethernet sub-module

**Note:** Data Control **JUMPER1** controls the RS-485 port's data communication of the virtual COM port associated with the RS-485 interface that is usually used for connections between IEC and PC without using the Ethernet sub-module (RTS stands for Ready to Send and ADDCC stands for Automatic Data Detection Control).

