OPC Connection via DCOM

service &
SUPPORT

Connection between OPC Server SINAUT Micro SC and OPC Client WinCC flexible using Ethernet via DCOM

FAQ

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OPC Connection via DCOM   ID-Number: 26312201

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1 General Information about the OPC DCOM Connection

1.1 Applications of this FAQ

This FAQ refers to the Micro Automation Set 21 "Wireless Data Communication based on GPRS" (22537809).

Up to 256 Remote Stations (RS 1 to RS256), each consisting of an S7-200 controller and an MD720-3 GPRS modem, can exchange data among themselves and with a central PC using GPRS and the internet. The SINAUT Micro SC software running on the PC coordinates the communication and provides the data via an OPC interface for them to be visualized.

This FAQ describes how to configure the WinCC flexible OPC client which has access to the OPC variables of SINAUT Micro SC from a separate PC via a DCOM connection.

This FAQ focuses on the OPC server SINAUT Micro SC and the OPC client WinCC flexible. Porting to other servers or clients may require certain modifications to the described settings.

The DCOM settings described here use very low security settings. To tailor DCOM to your own requirements, you have to create user (groups) among other things and assign authorizations. Only trained staff should perform these steps.

The following links provide support in this respect.

Table 1-1

Document / Page	Link
Using OPC via DCOM, Whitepaper	http://www.opcfoundation.org/DownloadFile.aspx?RI=326
OPCconnect.com	http://www.opcconnect.com/

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1.2   OPC DCOM Connection Possibilities

1.2.1   Disconnecting OPC server and OPC client

The control center in the MAS21 consists of an OPC server SINAUT Micro SC and an OPC client WinCC flexible to be installed on two separated PCs.

- The OPC server SINAUT Micro SC and the OPC client WinCC flexible must therefore not be installed on the same computer.
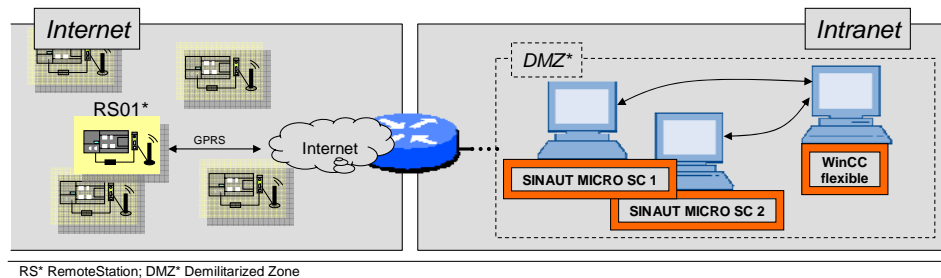
Figure 1-1
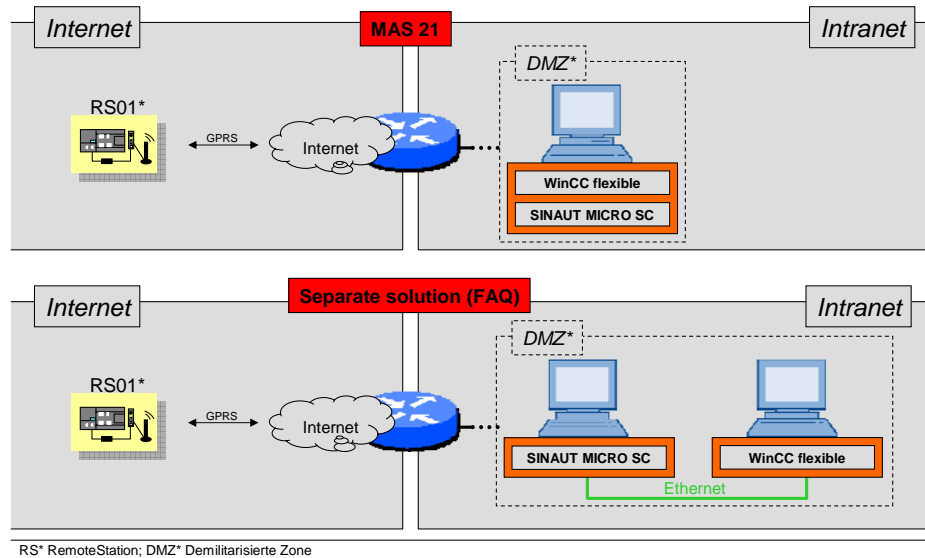
RS* RemoteStation; DMZ* Demilitarisierte Zone

1.2.2   Increasing the maximum number of remote stations

If an application requires more than 256 remote stations, it is possible to link several PCs each with a SINAU Micro SC using a central HMI PC via Ethernet connection.

- The WinCC flexible OPC client must be able to establish a connection to several SINAUT Micro SC OPC servers.
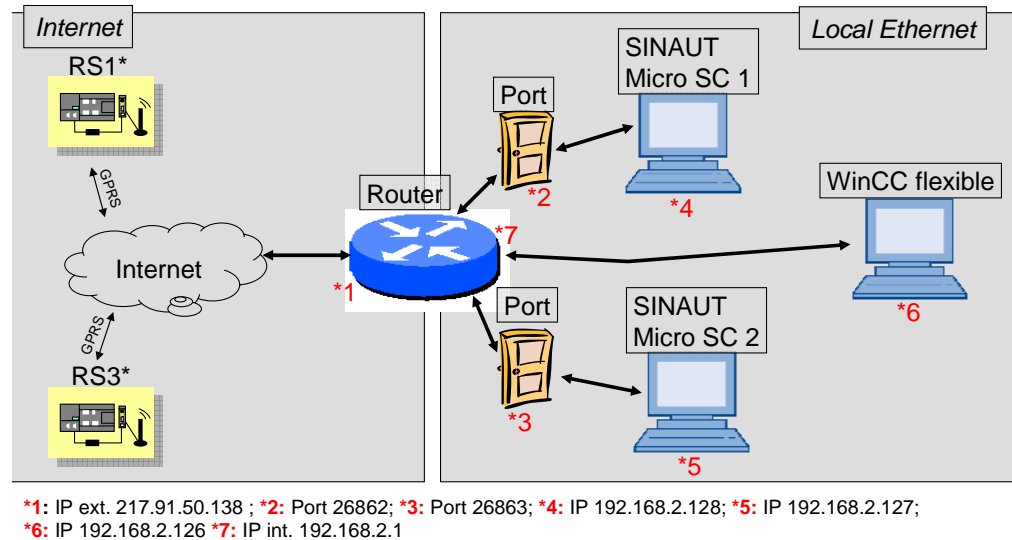
Figure 1-2

RS* RemoteStation; DMZ* Demilitarized Zone

2   Test Environment

2.1   Test Setup

The following test setup exemplifies all the necessary steps to cover the mentioned requirements (see chapter 1.2.1 and 1.2.2).

Figure 2-1

*1: IP ext. 217.91.50.138 ; ***2:** Port 26862; ***3:** Port 26863; ***4:** IP 192.168.2.128; ***5:** IP 192.168.2.127; ***6:** IP 192.168.2.126 ***7:** IP int. 192.168.2.1

RS* RemoteStation;

Internet:

The remote stations described in the Micro Automation Set 21 are required to test the functionality of the OPC communication via DCOM.

Local Ethernet:

All steps described below refer to the component from the section "Local Ethernet". Functional testing of the OPC communication via DCOM without the devices from the section *Internet* is possible with restrictions only.

- RS01 logs on to SINAUT Micro SC station number 1 via port 26862. These stations represent the first "RS pool" of 256 stations.

- RS03 logs on to SINAUT Micro SC station number 2 via port 26863. These stations represent the second "RS pool" of 256 stations.

- The WinCC flexible OPC client station visualizes both the first and the second "RS pool".

- All Ethernet stations are cross-linked in a **private networked without firewall**.

- The OPC server and the OPC client communicate in all cases via the DCOM interface.

- The authentication and identification level of all stations was set to the lowest settings.

2.2   SINAUT Micro SC 1, OPC Server

The following table describes the hardware platform and the software used for the SINAUT Micro SC OPC server **1**.

Table 2-1

No.	Name	Type
1.	Manufacturer	Fujitsu Siemens Computer
2.	Model name	CELSIUS W340
3.	Processor (performance)	P4 (3.2 GHz)
4.	RAM	1 GB
5.	Operating system	Microsoft Windows XP Professional, Version 2002 with Service Pack 2
6.	OPC Server	SINAUT Micro SC, V1.2.0.0

2.3   SINAUT Micro SC 2, OPC Server

The following table describes the hardware platform and the software used for the SINAUT Micro SC OPC server **2**.

Table 2-2

No.	Name	Type
7.	Manufacturer	Siemens
8.	Model name	SIMATIC MicroBox PC 420
9.	Processor (performance)	Mobile Intel Celeron (650 MHz)
10.	RAM	512 MB
11.	Operating system	Microsoft Windows XP Embedded, Version 2002 with Service Pack 2
12.	OPC Server	SINAUT Micro SC, V1.2.0.0

2.4 WinCC flexible, OPC Client

The following table describes the hardware platform and the software used for the OPC client.

Table 2-3

No.	Name	Type
1.	Manufacturer	Fujitsu Siemens Computer
2.	Model name	CELSIUS W350
3.	Processor (performance)	Intel Core 2 CPU (each 1.86 GHz)
4.	RAM	2 GB
5.	Operating system	Microsoft Windows XP Professional, Version 2002 with Service Pack 2
6.	OPC client	WinCC flexible 2005 with Service Pack 1 and Hotfix 7

2.5 Router/Internet

Any standard router with port forwarding can be used as router. The internet connection must feature a fixed IP address.

2.6 Remote stations RS1 and RS4

The remote stations consist of the following hardware:

Table 2-4

No.	Name	Type
1.	Power supply	LOGO! Power
2.	SIMATIC S7-200 controller	CPU 224 XP
3.	GSM/GPRS modem	SINAUT MD720-3, FW 1.7.3
4.	Antenna	Quad band antenna ANT 794-4MR

3   Configuration

3.1   Configuring the remote stations RS1 and RS3

Please observe the steps described in the Micro Automation Set 21 for the installation and configuration.

You can use either the program "Inspection Shaft" or "Stormwater Overflow Structure" as STEP7 Micro/WIN project.

While configuring the STEP 7 Micro/WIN data blocks, make sure that port 26862 is used for station RS1 and port 26863 for station RS3.
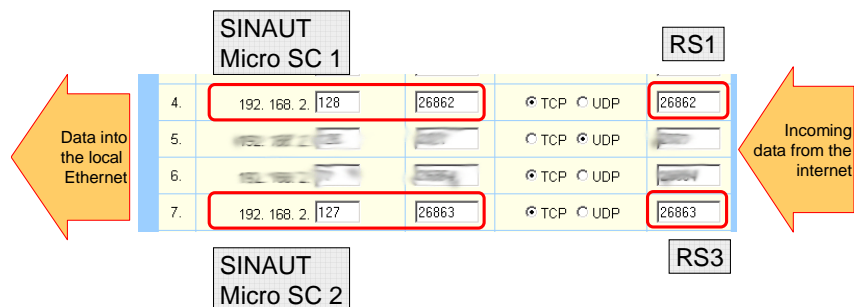
3.2   Setting up the router and the network environment

Set up the Ethernet connection and the IP addresses of the stations as shown in **Fehler! Verweisquelle konnte nicht gefunden werden.**.

Activate "Port Forwarding" at your router.

The following screenshot shows which ports have to be forwarded to which IP addresses.
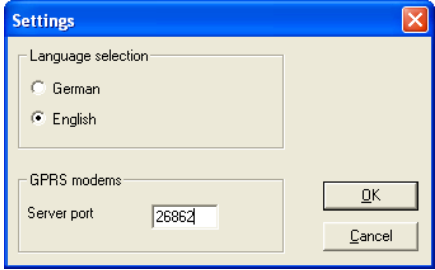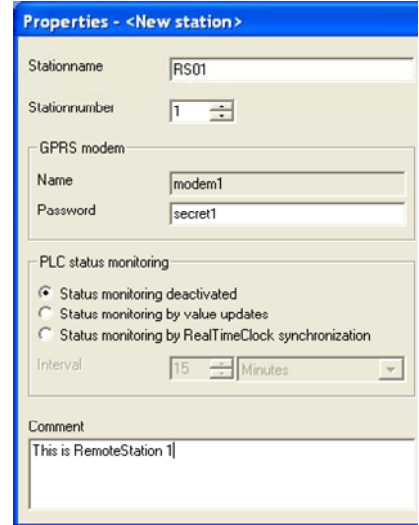
Figure 3-1
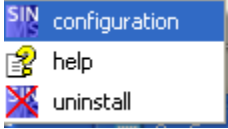
3.3   SINAUT Micro SC 1, OPC Server

3.3.1   SINAUT Micro SC

Set up the SINAUT Micro SC as follows:

Table 3-1

No.	Step	Note / Picture
1.	Start the configuration tool for SINAUT Micro SC via "Start/Programs/SIMATIC/SINAUT MICRO SC/Configuration".	
2.	Set up the port for the incoming GPRS data of the remote stations at "Tools/Options". Use port 26862.	
3.	Click the "Add" button to create the remote station 1.	
4.	Enter station name, station number, password and comment, and use these settings to configure the STEP 7 Micro/WIN project of the remote station 1 in the step from chapter 3.1. **You will need the station name later on in order to address the variables of the remote station 1.** Confirm with "OK".	
5.	Close the configuration tool.	

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3.3.2 Windows Firewall

Disable the Microsoft Windows XP firewall as follows:

Table 3-2

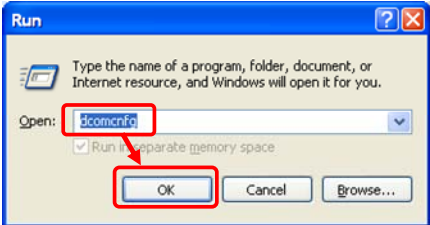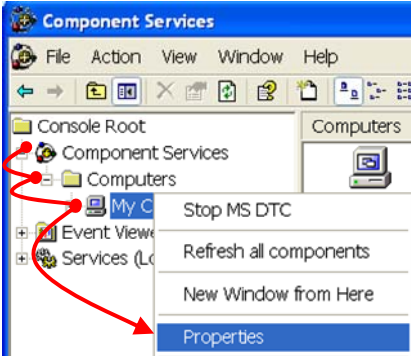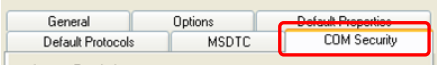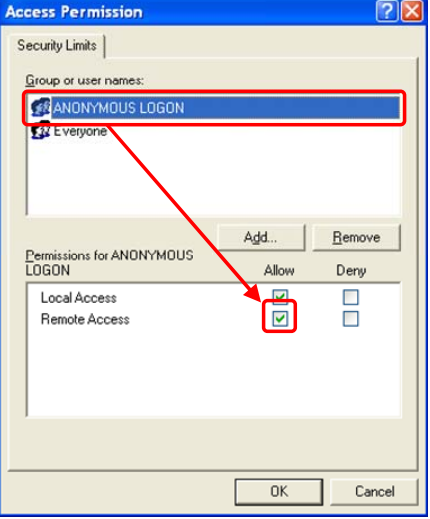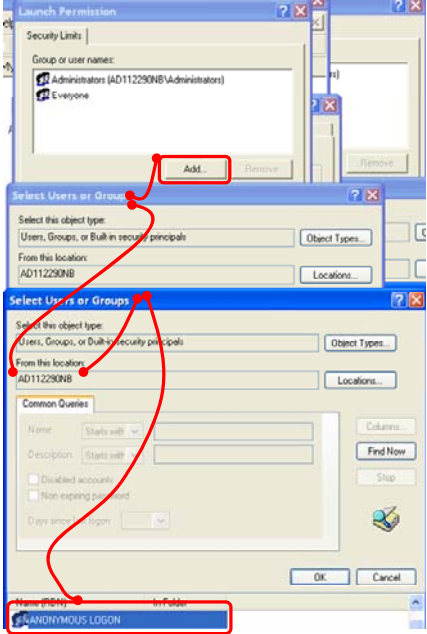| No.	Step	Note / Picture
1.	Open the Configuration menu of the Windows Firewall via "Start/Control Panel/Windows Firewall".	
2.	Disable the firewall in the "General" tab and confirm with "OK".	

3.3.3 DCOM settings

Make the DCOM settings as follows:
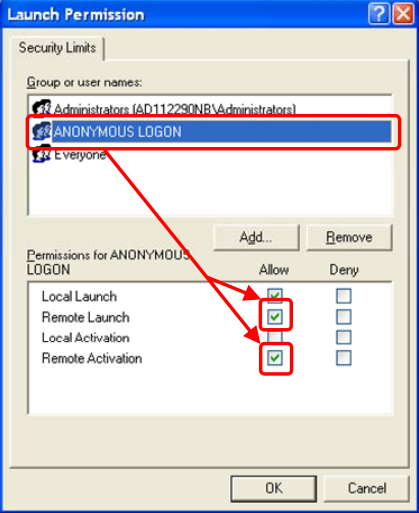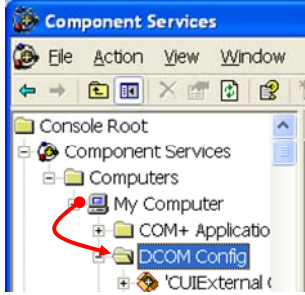
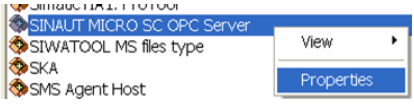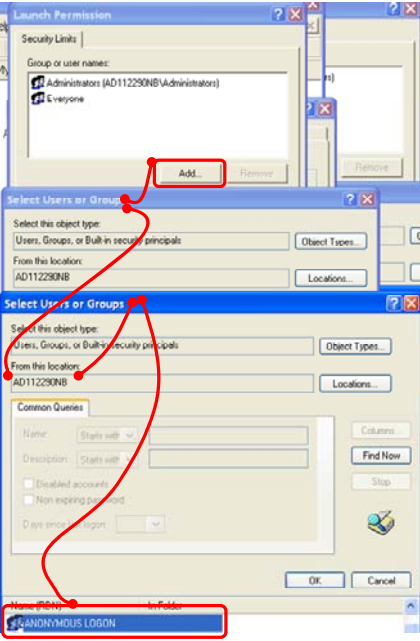**Note**   The steps describe here always refer to the default Windows DCOM settings. You can restore the default settings by removing all existing users and user groups in the places described here. Windows will automatically restore the default settings after the PC has been restarted.

Table 3-3

No.	Step	Note / Picture
1.	Open the "Execute" window via "Start/Execute".	
2.	Enter "dcomcnfg" and confirm with "OK" to open the "Component Services".	

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No.	Step	Note / Picture
3.	Enter the DCOM settings for your own PC. To do so, go to "Component Services/Computer/My Computer" in the navigation tree. Right-click "My Computer" and select "Properties".	
4.	Open the "COM Security" tab.	
5.	• Under "Access Permissions" click the "Edit" button. • Enable the "Remote Access" checkbox to add this authorization to the "ANONYMOUS LOGON" user group. • Confirm with "OK".	
6.	Under "Launch and Activation Permissions" click the "Edit..." button.	

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No.	Step	Note / Picture
7.	Add the "ANONYMOUS LOGON" user group. • Do so by clicking the "Add" button in the "Launch Permission" window. • In the "Select Users or Groups" window now click the "Advanced" button. • Make sure that the name of your local computer is entered in the "From this location" entry field. • Click the "Find now" button. • Select the "ANONYMOUS LOGON" user group and confirm with OK. • Click again OK.	
8.	The user group has been created. • Enable the authorizations "Remote Launch" and "Remote Activation" for the "ANONYMOUS LOGON" user group. • Confirm with "OK".	
9.	Click OK to close the Properties of My Computer.	
10.	Next set up the access permission especially for the SINAUT Micro SC OPC server. To do so, go to "My Computer" and "DCOM Config" in the navigation tree.	

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No.	Step	Note / Picture
11.	Select the entry "SINAUT MICRO SC OPC Server" and right-click to open the "Properties" menu.	
12.	Open the "Security" tab.	
13.	Adjust the "Launch and Activation Conditions" by enabling the "Customize" checkbox and clicking the "Edit" button.	
14.	Add the "ANONYMOUS LOGON" user group. • Do so by clicking the "Add" button in the "Launch Permission" window. • In the "Select Users or Groups" window now click the "Advanced" button. • Make sure that the name of your local computer is entered in the "From this location" entry field. • Click the "Find now" button. • Select the "ANONYMOUS LOGON" user group and confirm with OK. • Click again OK.	

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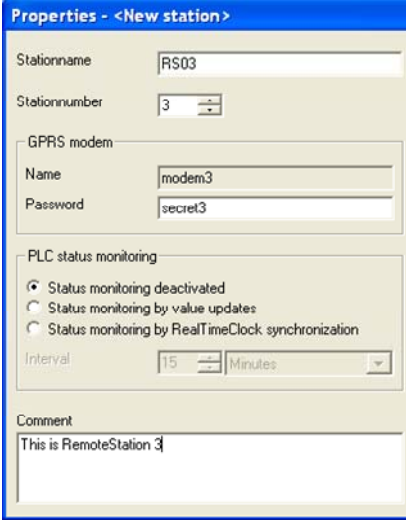| No.	Step	Note / Picture
15.	The user group has been created. • Enable the authorizations "Remote Launch" and "Remote Activation" for the "ANONYMOUS LOGON" user group. • Confirm with "OK".	
16.	Confirm all open windows with "OK" and close the "Component Services".	
17.	Restart the computer.	

3.4   SINAUT Micro SC 2, OPC Server

3.4.1   SINAUT Micro SC

Set up the SINAUT Micro SC as follows:

Table 3-4

No.	Step	Note / Picture
1.	Start the configuration tool for SINAUT Micro SC via "Start/Programs/SIMATIC/SINAUT MICRO SC/Configuration".	
2.	Set up the port for the incoming GPRS data of the remote stations at "Tools/Options". Use port 26863.	
3.	Click the "Add" button to create the remote station 3.	

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No.	Step	Note / Picture
4.	Enter station name, station number, password and comment, and use these settings to configure the STEP 7 Micro/WIN project of the remote station 3 in the step from chapter 3.1. **You will need the station name later on in order to address the variables of the remote station 3.** Confirm with "OK".	Properties - <New station> Stationname RS03 Stationnumber 3 GPRS modem Name modem3 Password secret3 PLC status monitoring ⦿ Status monitoring deactivated ○ Status monitoring by value updates ○ Status monitoring by RealTimeClock synchronization Interval 15 Minutes Comment This is RemoteStation 3
5.	Close the configuration tool.	

3.4.2 Windows Firewall

Disable the Windows Firewall as described in chapter 3.3.2.

3.4.3 DCOM settings

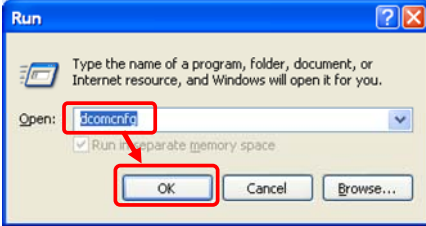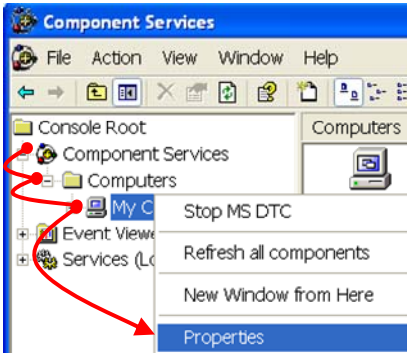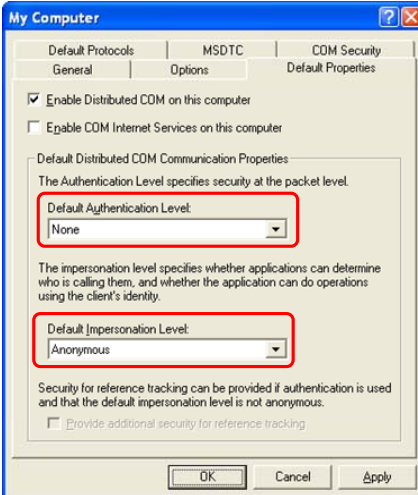Edit the DCOM settings as described in chapter 3.3.3.

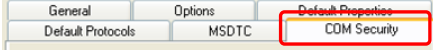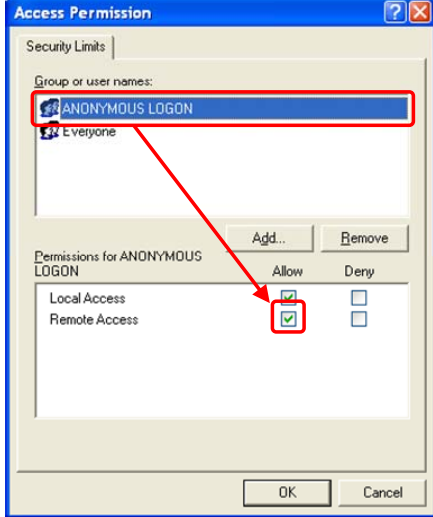## 3.5 WinCC flexible, OPC Client

3.5.1 Windows Firewall

Disable the Windows Firewall as described in chapter 3.3.2.

3.5.2 DCOM settings

Table 3-5

No.	Step	Note / Picture
1.	Open the "Execute" window via "Start/Execute".	
2.	Enter "dcomcnfg" and confirm with "OK" to open the "Component Services".	
3.	Enter the DCOM settings for your own PC. To do so, go to "Component Services/Computer/My Computer" in the navigation tree. Right-click "My Computer" and select "Properties".	
4.	Open the "Default Properties" tab.	
5.	Select "None" in the "Default Authentication Level" pull-down menu and "Anonymous" in the "Default Impersonation Level" pull-down menu. Confirm with "OK".	

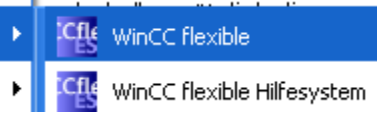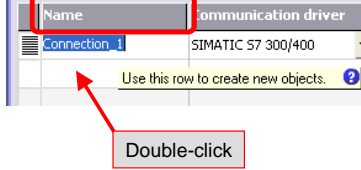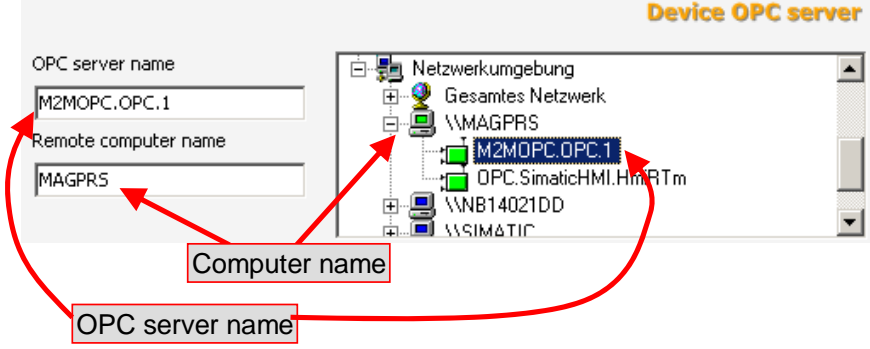| No.	Step	Note / Picture
6.	Open the "COM Security" tab.	
7.	• Under "Access Permissions" click the "Edit" button. • Enable the "Remote Access" checkbox to add this authorization to the "ANONYMOUS LOGON" user group. • Confirm with "OK".	

WARNING	**After you have made the settings in Table 3-5 no. 5, it is no longer possible to edit network settings. Consequently, the IP addresses must be assigned before that. Please remember to reset this setting after the OPC DCOM test.**

3.5.3   Setting up WinCC flexible

Depending on the program used in the remote station, different variables with different address ranges are sent to the central station and visualized in WinCC flexible.

The following description shows an example of addressing the floating point value VD2000 on the WinCC flexible user interface. This address may have to be adapted to the user program in the remote station.

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Table 3-6

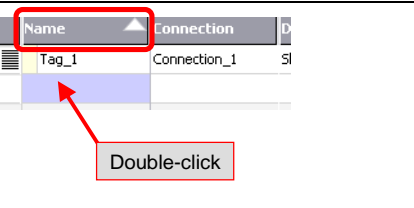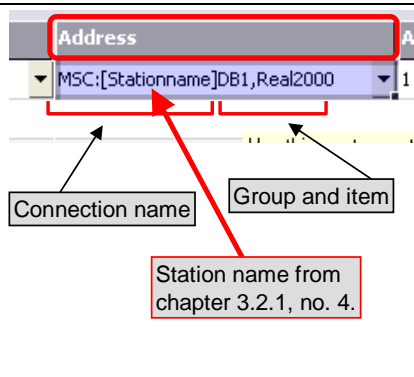| No.	Step	Note / Picture
1.	Start WinCC flexible via "Start/Programs/SIMATIC/WinCC flexible 2005/WinCC flexible 2005".	WinCC flexible WinCC flexible Hilfesystem
2.	Create a new WinCC flexible project via "Project/New".	WinCC flexi Project Edit New...
3.	Go to "Connections" in the navigation tree.	Screen_1 Communication Tags Connections Cycles Alarm Management Analog Alarms
4.	Create a new connection by double-clicking on an empty field of the "Name" column.	Name / Communication driver Connection_1 / SIMATIC S7 300/400 Use this row to create new objects. Double-click
5.	Select "OPC" as the communication driver.	Communication driver OPC
6.	Browse the "Network Environment" to select the SINAUT Micro SC 1 OPC Server. Device OPC server OPC server name: M2MOPC.OPC.1 Remote computer name: MAGPRS Netzwerkumgebung Gesamtes Netzwerk \\MAGPRS M2MOPC.OPC.1 OPC.SimaticHMI.HmiRTm \\NB14021DD \\SIMATIC Computer name OPC server name	

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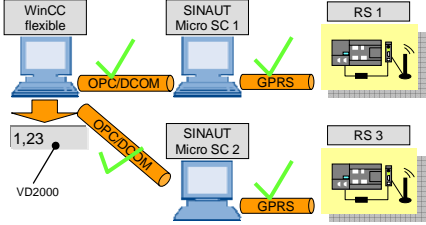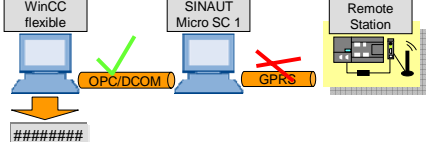| No.	Step	Note / Picture
7.	Go to "Tags" in the navigation tree.	Communication Tags Connections Cycles Alarm Management
8.	Create a new tag by double-clicking on an empty field of the "Name" column.	Name — Connection Tag_1 — Connection_1 Double-click
9.	Select the connection you have just created for this tag.	Connection ag_1 — Connection_1
10.	Address the tag VD2000 in the format "real" for the created OPC connection in OPC format.	Address MSC:[Stationname]DB1,Real2000 Connection name Group and item Station name from chapter 3.2.1, no. 4.
11.	Go to the "Screen_1" operator image in the navigation tree.	Screens Add Screen Template Screen_1 Communication
12.	Create an input/output field with the tag you have just created.	
13.	Repeat steps 3 to 12 for the second connection and the second tag. Please pay attention to: • the computer name of the OPC server 2 at step 6 • the station name of OPC server 2 at step 10. The station name was assigned in chapter 3.3.1, no. 4.	

Note	Create an alarm window in the operator screen of WinCC flexible and enable "System" as the alarm class and "Alarm events" as the display type. You will now be informed about the status of the OPC connection.

4   Testing the OPC Connection via DCOM

Table 4-1

No.	Step	Note / Picture
1.	Start the runtime of WinCC flexible via "Project/Generator/Start Runtime" to test the connection.	
2.	**If the OPC connection via DCOM works correctly with the remote station activated**, the input/output field will display the current value from the S7-200 controller (provided that value was sent to the SINAUT Micro SC server). You can assign any new value (allowed for the data type) to the tag. The new value is sent to the remote station via the OPC server.	
3.	**If the OPC connection via DCOM works correctly, without the remote station being activated**, the input/output fields will show the pound symbol (#). If step 6 of Table 3-6 can be carried out successfully, you can, however, assume that the OPC DCOM connection is active. Compared to the test from no.2 you can not ensure whether the authorizations for reading and writing the tags on the client side and on the server side have been set sufficiently.	
4.	**If the OPC connection via DCOM does not work correctly,** the input/output fields will show the pound symbol (#). The step from Table 3-6 no. 6 could not be carried out.	