


applications & TOOLS

Cyclically/non-cyclically transferring parameter values using SimaticNet Profidrive OPC Server via Profibus-DP using Excel as OPC Client

SIEMENS



Application description
for MICROMASTER 440

Cyclically/non-cyclically transferring parameter values using
SimaticNet Profidrive OPC Server via Profibus-DP using Excel as
OPC Client

ID-No: 24332811

Note

The Application Examples are not binding and do not claim to be complete regarding the circuits shown, equipping and any eventuality. The Application Examples do not represent customer-specific solutions. They are only intended to provide support for typical applications. You are responsible in ensuring that the described products are correctly used. These Application Examples do not relieve you of the responsibility in safely and professionally using, installing, operating and servicing equipment. When using these Application Examples, you recognize that Siemens cannot be made liable for any damage/claims beyond the liability clause described. We reserve the right to make changes to these Application Examples at any time without prior notice. If there are any deviations between the recommendations provided in these Application Examples and other Siemens publications - e.g. Catalogs - then the contents of the other documents have priority.

Warranty, liability and support

We do not accept any liability for the information contained in this document.

Any claims against us - based on whatever legal reason - resulting from the use of the examples, information, programs, engineering and performance data etc., described in this Application Examples shall be excluded. Such an exclusion shall not apply in the case of mandatory liability, e.g. under the German Product Liability Act ("Produkthaftungsgesetz"), in case of intent, gross negligence, or injury of life, body or health, guarantee for the quality of a product, fraudulent concealment of a deficiency or breach of a condition which goes to the root of the contract ("wesentliche Vertragspflichten"). However, claims arising from a breach of a condition which goes to the root of the contract shall be limited to the foreseeable damage which is intrinsic to the contract, unless caused by intent or gross negligence or based on mandatory liability for injury of life, body or health. The above provisions does not imply a change in the burden of proof to your detriment.

Copyright© 2006 Siemens A&D. It is not permissible to transfer or copy these Application Examples or excerpts of them without first having prior authorization from Siemens A&D in writing.

If you have any recommendations relating to this document then please send them to us at the following e-mail address:

<mailto:sdsupport.aud@siemens.com>

Cyclically/non-cyclically transferring parameter values using
SimaticNet Profidrive OPC Server via Profibus-DP using Excel as
OPC Client

ID-No: 24332811

Preposition

Objective of the application

A simple control and setpoint input of a MICROMASTER 440 via the cyclic channel of PROFIBUS-DP according to OPC PROFIDRIVE profile with Excel as OPC client is implemented in this application. It is used to demonstrate and present the direct control of a MICROMASTER 440 as DP slave connected to PROFIBUS, whose advantages and customer benefits are used to support sales, promotion and specialist support as well as in training courses.

Core contents of this application

This application discusses the following core points:

- Configuring a slave
- Equipping the components Configurator with components
- Adapting the SIMATIC NCM project
- Controlling the MM440 via parameter

Demarcation

Can be used for all test applications with MM440 where it is sufficient to transfer parameter values to enter the frequency setpoint/ramp-up time/ramp-down time as well as control the drive inverter using an ON/OFF command. Faults can also be acknowledged via the cyclic channel of PROFIBUS-DP - and where no detailed diagnostics are required from a drive-specific perspective and/or Profibus-specific perspective.

This application does not include a description of the following

- the SIMATIC NCM PC software
- the SIMATIC NET PC software

Reference to the Automation and Drives Service & Support

This article is from Thomas Haberl, RD SDW STG A&D S13

Cyclically/non-cyclically transferring parameter values using
SimaticNet Profidrive OPC Server via Profibus-DP using Excel as
OPC Client

ID-No: 24332811

Table of Contents

Table of Contents	4
1 Cyclic operation	5
2 Prerequisites	7
2.1 Hardware components	7
2.2 Software components	7
3 Configuration and wiring.....	8
3.1 Step 2: Slave configuration	9
3.2 Step 3: Adding components to the Component Configurator.....	10
3.3 Step 4: Setting the PG/PC interface	11
3.4 Step 5: De-archiving and opening the SIMATIC NCM project	12
3.5 Step 6: Configuring the SIMATIC NCM project and downloading into the Component Configurator	13
3.6 Step 7: Controlling the MM440 via parameters.....	14
4 References.....	16
4.1 Reference data	16
4.2 Internet link data	16
4.3 History	16

Parameters of the MICROMASTER 440 are accessed in a user-friendly fashion via the PROFIdrive parameter channel of PROFIBUS-DP using the OPC-PROFIdrive profile server (Profidrive.Profilserver) and the OPC-PROFIdrive bus server (OPC.SimaticNET.PD) with EXCEL

Cyclically/non-cyclically transferring parameter values using SimaticNet Profidrive OPC Server via Profibus-DP using Excel as OPC Client

ID-No: 24332811

Application description

1 Cyclic operation

Parameters of the MICROMASTER 440 are accessed in a user-friendly fashion via the PROFIdrive parameter channel of PROFIBUS-DP using the OPC-PROFIdrive profile server (Profidrive.Profilserver) and the OPC-PROFIdrive bus server (OPC.SimaticNET.PD) with EXCEL as OPC client. Parameters can be cyclically read and non-cyclically (acyclically) written to. In this case, the PROFIdrive profile server, based on the OPC standard, compiles the complicated DPV1 functionality into user-friendly device and parameter names.

The OPC-PROFIdrive bus server is used to connect MICROMASTER 440 to the OPC client using the DP protocol. Data is exchanged using so-called parameters.

The OPC-PROFIdrive bus server maps the parameters of the OPC-PROFIdrive profile server on the SIMATIC NET PROFIBUS DPC2 service. The OPC client accesses, on its side, the OPC-PROFIdrive profile server.

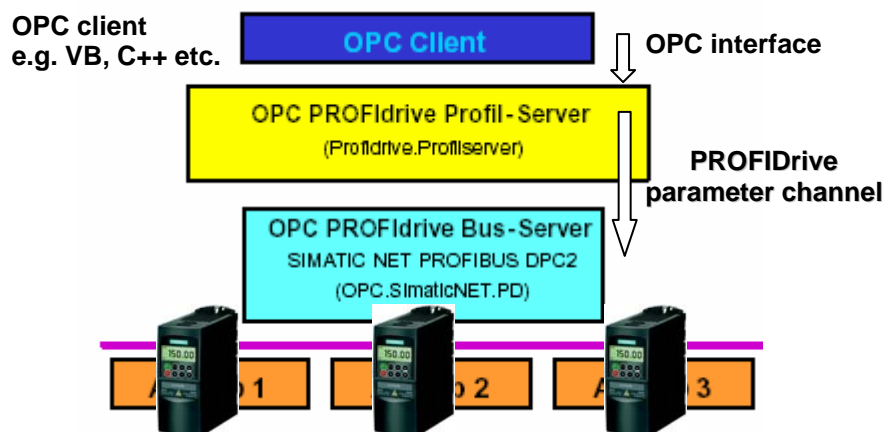


Fig. 1-1

More detailed information can be taken from the Manuals
SIMATIC NET GRUNDLAGEN / SIMATIC NET
SCHNITTSTELLEN [Manuals SIMATIC NET BASICS /
SIMATIC NET INTERFACES.

Cyclically/non-cyclically transferring parameter values using
SimaticNet Profidrive OPC Server via Profibus-DP using Excel as
OPC Client

ID-No: 24332811

More detailed information can be taken from the Manuals SIMATIC NET
GRUNDLAGEN / SIMATIC NET SCHNITTSTELLEN [Manuals SIMATIC
NET BASICS / SIMATIC NET INTERFACES.

Cyclically/non-cyclically transferring parameter values using
SimaticNet Profidrive OPC Server via Profibus-DP using Excel as
OPC Client

ID-No: 24332811

2 Prerequisites

2.1 Hardware components

- PG or PC
- MICROMASTER 440
- SIMATIC NET PROFIBUS interface (e.g. CP5511/12, CP5611 or CP5613/14)
- PROFIBUS option board
- BOP basis operator panel
- PROFIBUS cable
- Bus connector

2.2 Software components

- MS Windows 2000 SP3 / MS Windows XP / Windows 2003 Server
- SIMATIC NCM PC V5.3 SP2 software
- SIMATIC NET PC V6.3 software

Cyclically/non-cyclically transferring parameter values using
SimaticNet Profidrive OPC Server via Profibus-DP using Excel as
OPC Client

ID-No: 24332811

3 Configuration and wiring

Step 1: Hardware configuration

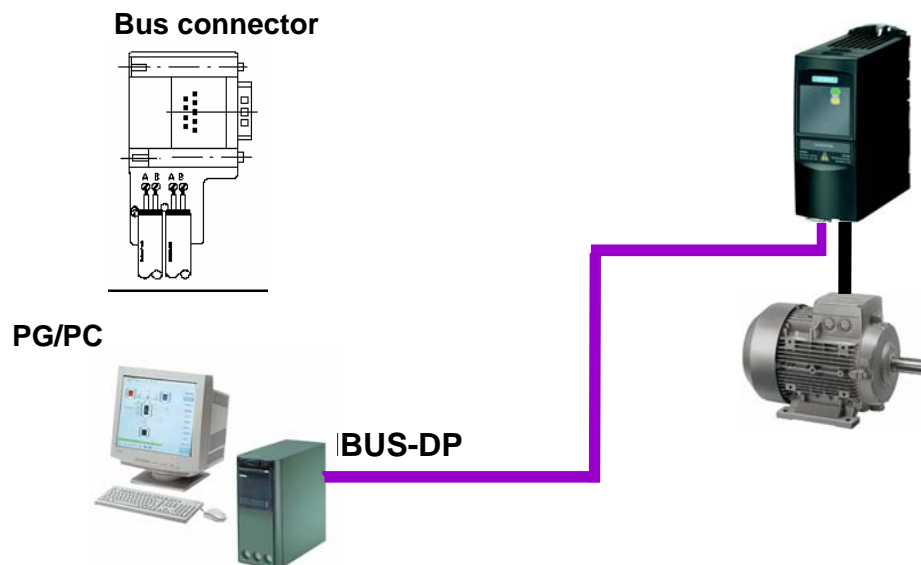


Fig. 3-1 Configuration and wiring

The configuration and wiring must be implemented according to the data provided in the Operating Instructions for the particular device in compliance with EMC rules and regulations.

(connections between the master and the slave must be established using PROFIBUS cables and the appropriate bus connectors. It must be ensured that the **bus** is correctly **terminated**).

Digital input 4 should be connected with a **high signal level** (fail-safe) via the internal power supply of the MM440 or externally via the 24V supply; if possible it should be configured so that it can be switched.

The MICROMASTER 440 drive inverter should first be commissioned. The information required to commission the MICROMASTER 440 can be taken from its Operating Instructions.

Cyclically/non-cyclically transferring parameter values using
SimaticNet Profidrive OPC Server via Profibus-DP using Excel as
OPC Client

ID-No: 24332811

3.1 Step 2: Slave configuration

The MICROMASTER 440 drive inverter should first be commissioned. The information required to commission the MICROMASTER 440 can be taken from its Operating Instructions.

In a next step, the necessary parameters should be set from the BOP:

P0003(0) = 3 (access stage)
P0701(0) = 99 (BICO enabled)
P0702(0) = 99 (BICO enabled)
P0704(0) = 99 (BICO enabled)
P0731(0) = 0 (function, digital output 1)
P0732(0) = 0 (function, digital output 2)
P0840(0) = r0747.0 (ON/OFF1)
P1000(0) = 3 (selects the frequency setpoint)
P1020(0) = 1 (fixed frequency selection bit 0)
P2104(0) = r0747.1 (source, 2nd error acknowledgement)
P2106(0). = r0722.3 (source, external fault)

Please note that digital input 4 of the MM440 must be set for operation. This input should be able to be switched so that faults can be simulated in the application.

Cyclically/non-cyclically transferring parameter values using
SimaticNet Profidrive OPC Server via Profibus-DP using Excel as
OPC Client

ID-No: 24332811

3.2 Step 3: Adding components to the Component Configurator

Open the Component Configurator using **Start > Station Configurator**.

Add the **OPC Server** component of the station to index 1. Acknowledge the settings with **OK**.

Add the available components **CP5511/12**, **CP5611** and **CP5613/14** to **index 4**. Acknowledge the settings with **OK**.

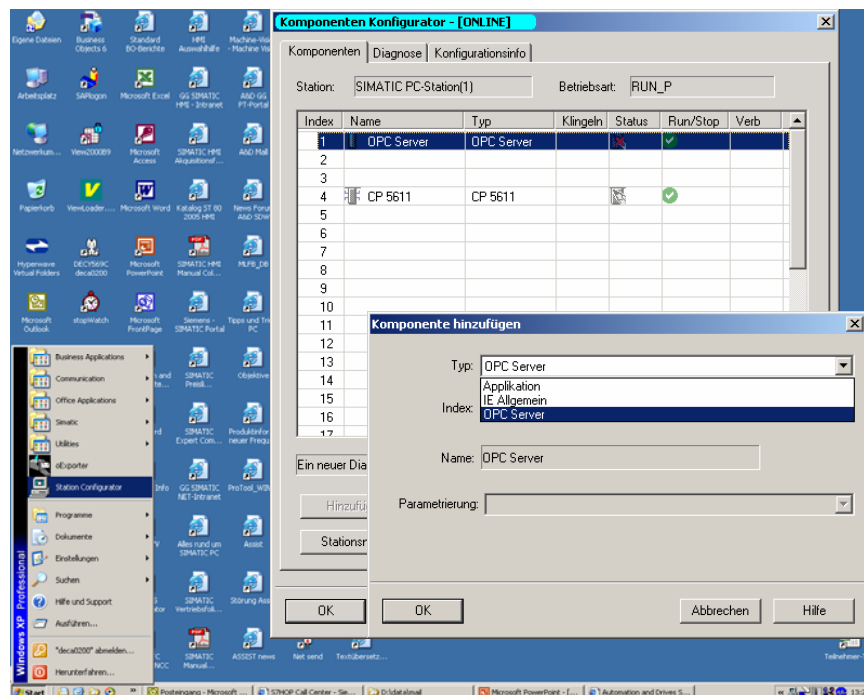


Fig. 3-2

Under Start > Settings > Control panel > Set PG/PC interface set the interface to "PC internal (local)".

Cyclically/non-cyclically transferring parameter values using
SimaticNet Profidrive OPC Server via Profibus-DP using Excel as
OPC Client

ID-No: 24332811

3.3 Step 4: Setting the PG/PC interface

Under **Start > Settings > Control panel > Set PG/PC interface** set the interface to "**PC internal (local)**".

Acknowledge the settings with **OK**.

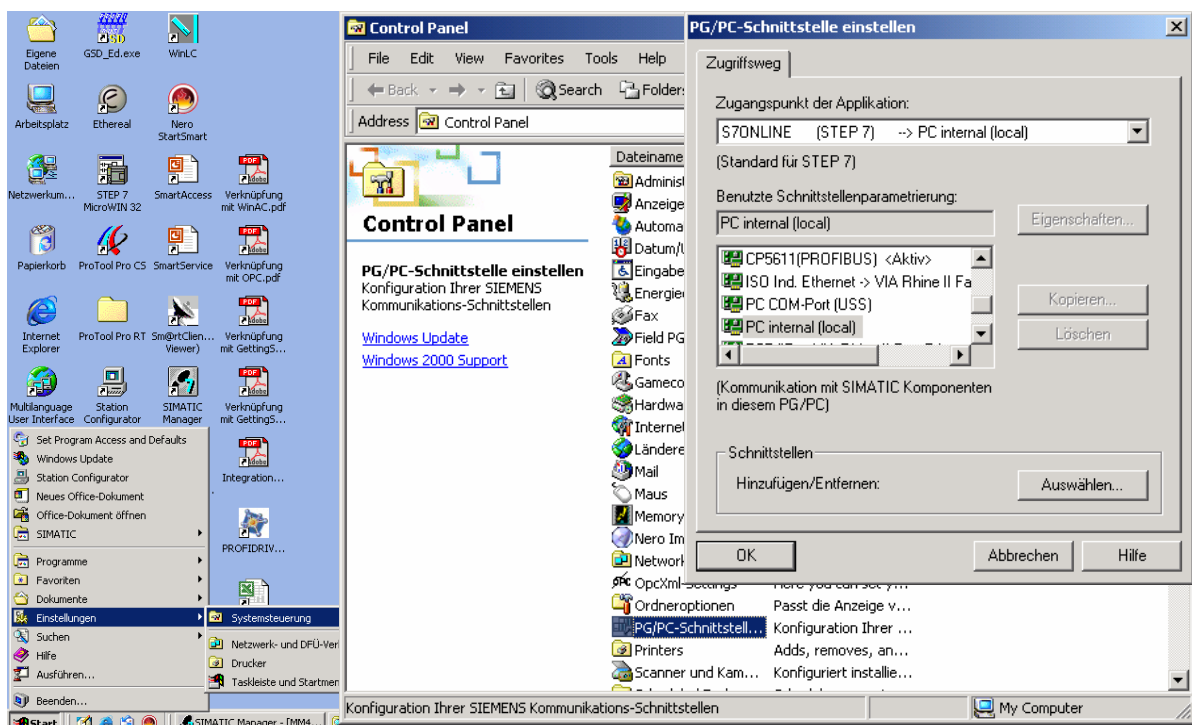


Fig. 3-3

Cyclically/non-cyclically transferring parameter values using
SimaticNet Profidrive OPC Server via Profibus-DP using Excel as
OPC Client

ID-No: 24332811

3.4 Step 5: De-archiving and opening the SIMATIC NCM project

De-archive the file "MM440_Profidrive.zip" into the directory C:\Program files\Siemens\SIMATIC.NCM\Examples.

Start the NCM PC Manager via Start > SIMATIC > SIMATIC NCM PC Manager

Open the project "MM440_Profidrive" via File > Open > Search in the directory

C:\Program files\Siemens\SIMATIC.NCM\Examples.

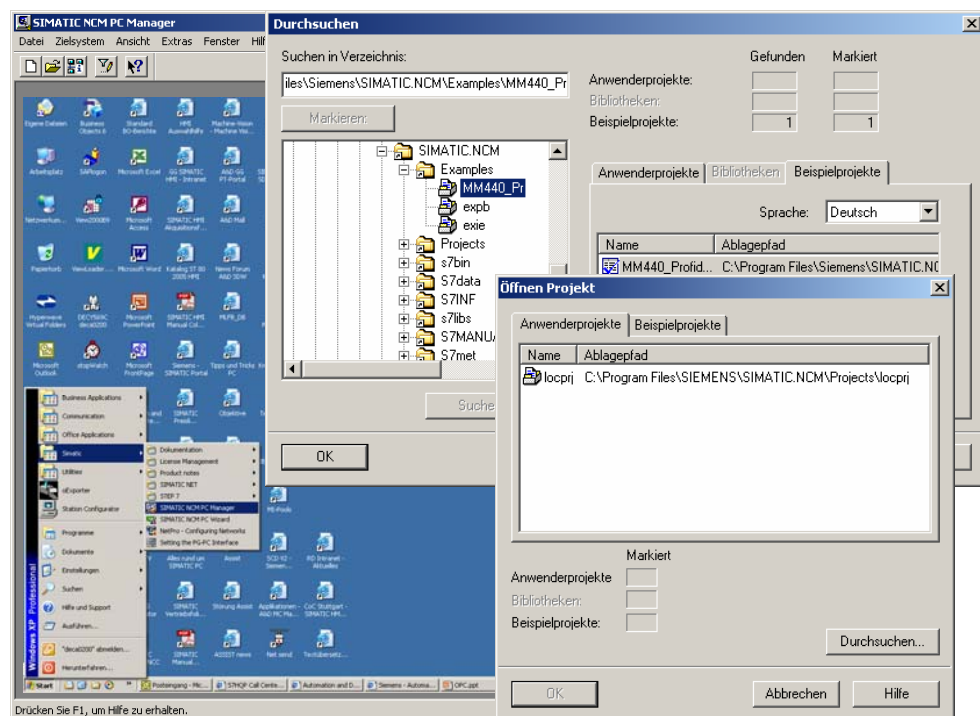


Fig. 3-4

Caution! If you use a different Profibus-CP than the CP5611 used in this project, then you must first appropriately adapt the hardware configuration.

Cyclically/non-cyclically transferring parameter values using
SimaticNet Profidrive OPC Server via Profibus-DP using Excel as
OPC Client

ID-No: 24332811

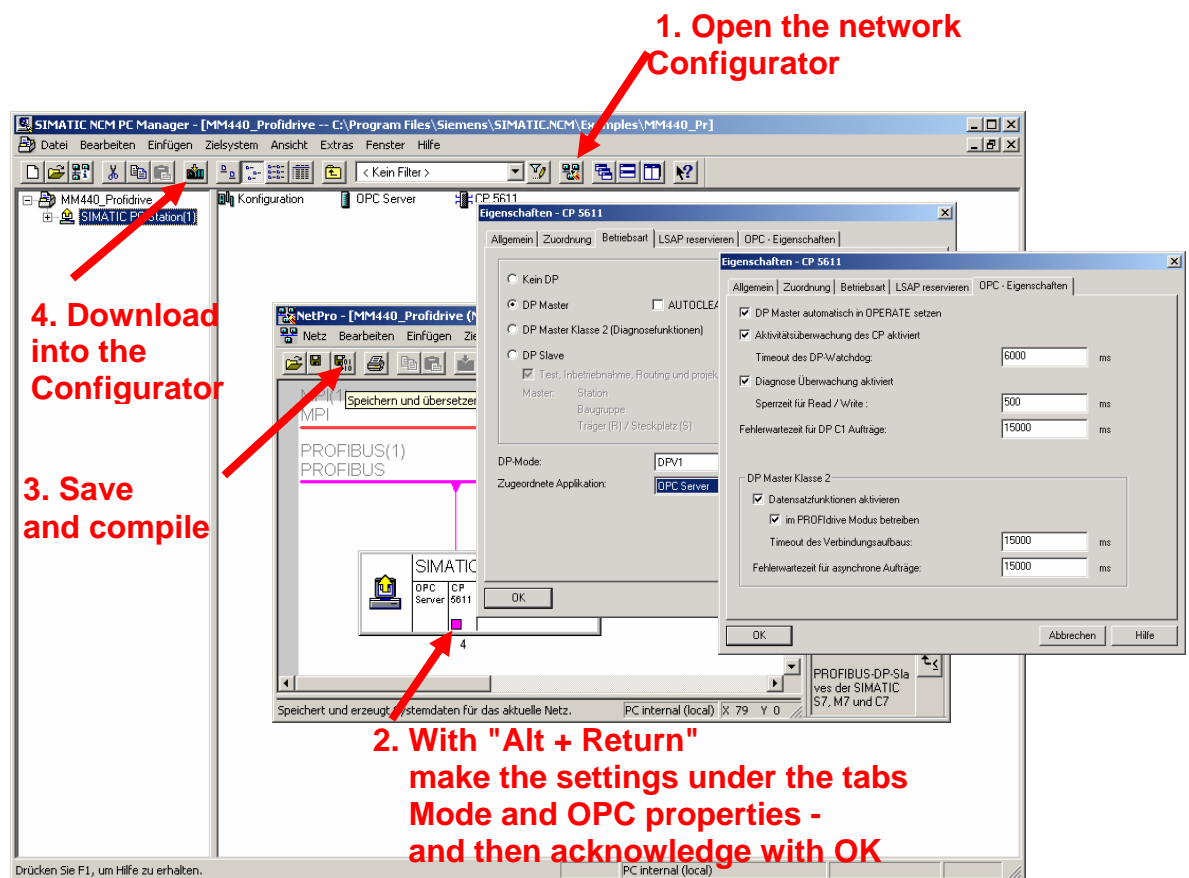
3.5 Step 6: Configuring the SIMATIC NCM project and downloading into the Component Configurator

Caution! If you use a different Profibus-CP than the CP5611 used in this project, then you must first appropriately adapt the hardware configuration.

Open "**Network Configurator(1)**"; click on the Profibus-CP of the SIMATIC HMI station and press the keys "**Alt + Return(2)**" to change to the object properties.

There, make the changes as shown in the diagram below.

"**Save and compile(3)**"; the complete network configuration. Close the network Configurator. Highlight/select the **SIMATIC PC Station** in the SIMATIC NCM Manager. Then press the button "**Download to Configurator(4)**".



Cyclically/non-cyclically transferring parameter values using
SimaticNet Profidrive OPC Server via Profibus-DP using Excel as
OPC Client

ID-No: 24332811

Fig. 3-5

3.6 Step 7: Controlling the MM440 via parameters

De-archive the file "OPC_DATACONTROL_PROFILSERVER.zip" in a directory that you have selected.

Open the Excel file "OPC_DATACONTROL_PROFILSERVER.xls" and press the button "Activate macros".

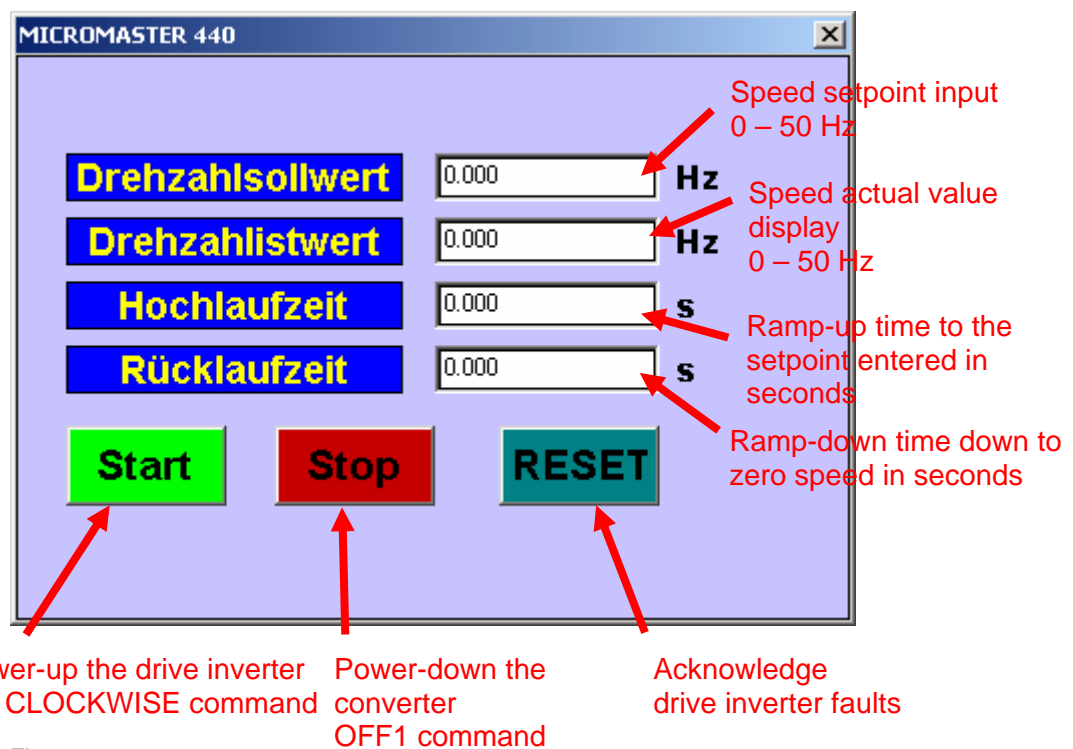


Fig. 3-6

Cyclically/non-cyclically transferring parameter values using
SimaticNet Profidrive OPC Server via Profibus-DP using Excel as
OPC Client

ID-No: 24332811

Using the ActiveX control

- With the mouse pointer click in the input field for the speed setpoint (enter the frequency).
- Enter a setpoint between 0.00 and 50.00 Hz.
- With the mouse pointer click in the input field for the ramp-up time (accelerating time).
- Enter a ramp-up time to the setpoint of between 0.00 and 10.00 s (max. 650 s).
- Enter a ramp-down time to standstill of between 0.00 and 10.00 s (max. 650 s).
- Press the "**Start**" button.
- The drive powers up and now linearly accelerates from standstill up to the required frequency setpoint in the selected ramp-up time.
- The frequency actual value can be monitored in the "speed actual value" output field
- Press the "**Stop**" button.
- The drive linearly runs down from the frequency actual value to zero speed in the selected ramp-down time.
- De-activate digital input 4 by withdrawing the high signal via the switch (if a switch cannot be used, remove the supply for digital input 4 by simply removing the wire connection).
- Observe the fault shown in the BOP display (F009 = external run-down).
- Activate digital input 4 by re-establishing the high signal via the switch (if a switch is not possible then supply digital input 4 by re-establishing the wire connection).
- Acknowledge the MM440 fault by pressing the "**RESET**" button.

This list is in no way complete and only reflects a selection of suitable references.

Cyclically/non-cyclically transferring parameter values using
SimaticNet Profidrive OPC Server via Profibus-DP using Excel as
OPC Client

ID-No: 24332811

Appendix and references

4 References

4.1 Reference data

This list is in no way complete and only reflects a selection of suitable references.

Table 4-1

	Subject area	Title
/1/		OLE for Process Control, Data Access Custom Interface Standard, Version 2.0 http://www.opcfoundation.org/
/2/		PROFIDrive – Profil Antriebstechnik, Version 3 [PROFIDrive – profile drive technology, Version 3] http://www.profibus.com/
/3/		Spezifikation DriveServer, Version 1.1 [Specifications, DriveServer, Version 1.1] http://www.drivecom.org/

4.2 Internet link data

This list is in no way complete and only reflects a selection of suitable references.

Table 4-2

	Subject area	Title
\1\		Siemens A&D Customer Support
\2\		

4.3 History

Table 4-3 History

Version	Date	Change
V1.0	November 2006	First edition