

# SINUMERIK 810D / 840Di sl / 840D / 840D sl

## Upgrade Instructions

### HMI Advanced SW 7.6 SP2 HF9 for PC / PG

2014-01-29

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HMI Advanced 07.06.02.09 (07.60.59.16) for PC / PG

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#### **Installation on PC / PG:**

HMI Advanced SW V7.6 SP2 HF9 is a full version.

Installation of this software requires a PC exclusively with German or English Windows-XP SP3, DVD drive, network card, min. 1GB RAM and 2GB free hard disk capacity. It can also be installed on a PC with German or English Windows 7, but not in the directory C:\Programs resp. C:\Program Files.

HMI-Advanced comprises all texts in German, English, French, Italian, Spanish and "Chinese simplified". In general, the help for setting and machine data is only provided in German and English. All additional languages V07.06.02 installed for the HMI-Advanced 7.6 SP2 must be reinstalled anew after installing this Hotfix.

The HMI Advanced software includes the standard cycles (technology cycles) V07.05.11.01 and the measuring cycles V07.05.10.01 in an installable form. These are available as archives in the directory Archives / Cycle archives. There you will also find the upgrade instructions for the standard cycles or measuring cycles in files SIEMENS.D.ARC or SIEMENS.E.ARC (readable with the editor under Services). A new cycle archive CYC832AS.ARC is stored under cycle archives to use these technology cycles with the option "Advanced Surface". Please note that this archive CYC832AS.ARC is read in last. It overwrites CYCLE832 and the operator interface for this cycle.

This archive is not required for technology cycle applications without this option.

The ePS client software V04.04.03.12 is included in the HMI Advanced software.

You can call up this installation under Windows XP via Start / Programs / SINUMERIK 840D / Tools.

The HMI Advanced software includes the Acrobat Reader V4 which is used for the Help function. Installation of Acrobat Reader V5 or higher will result in the Help function of the HMI Advanced to become unsuitable.

The HMI Advanced software has only been approved for screen resolutions 640 x 480 through 1024 x 768. On a PC / PG "small font sizes" must have been set for the desktop, normally size 8, resp. 96dpi.

The HMI Advanced software is entered in the Windows registry during installation and can be deinstalled again under Control Panel / Software. Only one HMI Advanced or one Start-Up Tool can be installed on a WinXP system.

HMI Advanced can be run without administrator rights if the logged on user has write access in the installation directory and its subdirectories.

The HMI Advanced software has been defaulted for a screen of 640 x 480. It can be changed to full screen for the current screen resolution (max. 1024 x 768). You can do this by setting RESOLUTION=1 in section [Control] in file ...user\mmc.ini.

Please note the documentation "HMI Advanced Start-Up (IM4)" on the delivered DVD.

#### **Information on how to install the HMI Advanced software:**

When installing the HMI Advanced software in the "solution line" mode, the system prompts you for which drive software the installation shall be performed in order to reduce the memory space on the hard disk. SW 2.x with NCU7x0.1 or NCU7x0.2; SW 4 or later with NCU7x0.3. By default, the installation is performed for both drive software versions.

The HMI Advanced software requires components of the STEP7 driver for operation on SINUMERIK 840D sl as well. Therefore "with STEP7 drivers" must be selected during installation on PCs without STEP7, otherwise this system prompt must be negated.

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### **Installation of the HMI Advanced software:**

The installation process is started when you call SETUP.EXE in the HMI Advanced software directory on the delivered DVD. You will then be guided through the process by InstallShield.

You can install the software in any directory of your choice, but the path may not contain any blanks.

You can choose one of three different installation methods:

- Online with NCU link  
At least one network card must be installed in the PC for this purpose.  
In this mode, you can operate an 840D sl as if it were a PCU 50.3.
- Local without link to an NCU.
- Local without link to an NCU, but with a simulated NCK.

The "Online" version must be selected. Both local modes have not been released for use.

The installation version **solution line** will then be requested, meaning operation on SINUMERIK 840D sl NCU7x0, or **powerline**, meaning operation on SINUMERIK 810D powerline or 840D powerline. With **solution line**, the user is prompted whether the message texts for the drive SW 2.x and/or SW 4.4 shall be installed, that means operation on an NCU 7x0.1 / .2 resp. on NCU 7x0.3

**Note:** If HMI Advanced is to be used both on solution line and on powerline, the "solution line" installation version must be chosen.

The request for installation of the STEP7 drivers must only be answered with no if STEP7 has already been installed.

### **Installation under Windows 7:**

Administrator rights are required for installation. The installation path may NOT be changed into C:\Programs resp. C:\Program Files. Same installation procedure is described above.

**First start of the start-up tool following installation:** Click with the right mouse button on the Startup icon and select "run as Administrator" to store the necessary settings. Notice: When double-clicking on an application, no administrator rights are granted to the process which will not function as expected.

### **Notes regarding the operation under Windows 7:**

- Operation on solution line is possible with and without installing STEP7 V5.5 on PC.
- Operation on Powerline under Win7 32Bit is possible with and without installing STEP7 V5.5 on PC.
- Operation on Powerline under Win7 64Bit is only possible when installing STEP7 V5.5 SP2 on PC.

### **Connection of the PC / PG to NCU 7x0:**

HMI Advanced and the NCU communicate through a network connection based on TCP/IP. (See documentation IM5 on the delivered DVD for detailed information.)

The easiest case is a direct connection between the PC / PG network card and the NCU 7x0, X120 using a cross network cable. The network card of the PC / PG is defaulted to a fixed IP address 192.168.214.250 with SubnetMask 255.255.255.0.

In this configuration the HMI Advanced software can communicate with the NCU, as the IP address of the NCU has been defaulted in the HMI Advance software to X120 with 192.168.214.1.

Alternatively, a network connection can also be established to the NCU X127. In this case the PC gets its IP address from the NCU DHCP server (usually address 192.168.215.2). The IP address of the NCU (192.168.215.1) must be set in the HMI Advanced software.

Network connection to the NCU can alternatively also be made through a company network. In this case the PC gets its IP address from the company network DHCP as usual. The NCU is connected to the company network via X130 and also gets its IP address from the company network DHCP. This IP address can be obtained either from the network administrator or it can be read from the 7-segment display during ramp-up of the NCU with NC switch position 8. HMI Advanced must have been informed about the IP address of the NCU under Start-up / HMI / NCU connection.

**Note:** As of NCU SW 2.4 SP1 resp. 1.5, the access must be released explicitly in the NCU (basesys.ini) via

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X130 (remove commentary characters before the FirewallOpenPorts=... entry).

If the connection failed nevertheless, please check the following:

- Can the PC / PG reach the NCU with "ping"? (DOS shell, ping 192.168.214.1 )
- In ..\mmc2\regie.ini, line 199 "Startup1 = name := cp\_840di, Timeout := 0" must not be commented out.
- In ..\mmc2\mmc.ini or in ..\user\mmc.ini there must be a non-commented out section [NCU840D] in the following form:  

```
[NCU840D]
ADDRESS0=192.168.214.1,LINE=10,NAME=/NC,SAP=040d,PROFILE=CLT1__CP_L4_INT
ADDRESS1=192.168.214.1,LINE=10,NAME=/PLC,SAP=0202,PROFILE=CLT1__CP_L4_INT
ADDRESS2=192.168.214.1,LINE=10,NAME=/CP,SAP=0501,PROFILE=CLT1__CP_L4_INT
```

 The parameters for the SINAMICS drives are determined by HMI Advanced itself and will be entered automatically in user\mmc.ini during the second ramp-up.
- If, with STEP7 5.4, the HMI does not communicate with the NCU, please check the settings under Control Panel / Set PG/PC Interface. There, an access point SINUMERIK\_CP (SINUMERIK 7xx) -> TCP/IP -> <Network Card> must be available in addition to S7ONLINE. This access point might have to be configured as specified.

**Connection of the PC / PG to 810D / 840D:**

HMI Advanced and 810D / 840D communicate via an MPI connection from the MPI/DP connection of the PC / PG to the MPI / OPI connection of the 810D / 840D. On the HMI the OPI has been defaulted with 1.5 MBaud and NC/PLC address 13. The MPI interface of the PC / PG (Control Panel / PG/PC Interface) must be set to "S7ONLINE (STEP7) → CPxxx (MPI)".

**Switchover between solution line and powerline:**

For servicing, the HMI Advanced software can be switched over for operation on solution line or powerline. This requires an installation for operation on solution line.

Under Start / Programs / SINUMERIK 840D the program "NCU Connection Wizard" can be called which enables the switchover.

Note:

Switchover must be carried out prior to starting the HMI Advanced software.

The program "NC Connect Wizard" changes section [NCU840D] in ...user\mmc.ini. The regie.ini is not changed, as a running cp\_840di does not disturb operation on powerline.

In the case of parallel operation with STEP7, the S7 interface must be changed manually from TCP/IP to MPI.

**Note for operation on the 2nd desktop:**

When HMI Advanced is started on the 2nd desktop, the header with the alarm line may not appear.

Remedy: Start the Task Manager on the 2nd desktop (e.g. via Start / Run -> taskmgr). Mark the "Header" in the "Applications" tab and click with the right-hand mouse button on "In foreground".

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Error corrections in HF9 compared to SW 7.6 SP2 HF8:

PR number

AP01567295	AP01580250	RQ AP01433673	AP01504792
AP01479600	AP01512671		

A new OPC Server V03.07 is included.

A new CP for solution line cp\_840di.exe V2.22 is included

Functional improvements in the component NCDDE.

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Error corrections in HF7 compared to SW 7.6 SP2 HF6:

PR number

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AP01391437	AP01476041	AP01476054	
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The problem „NCDDE does not work correctly“ has been eliminated with this Hotfix.

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Error corrections in HF6 compared to SW 7.6 SP2 HF5:

PR number

AP01398532	AP01430768	AP01433193	
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- HF6 comprises the remote diagnosis Software RCS Host V1.2.
- Improvements when operating the system under Windows 7

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Error corrections in HF5 compared to SW 7.6 SP2 HF4:

PR number

AP01355774	AP01329690	AP01370441	AP01288522
AP01312589	AP01346474	AP01368532	

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Error corrections compared to SW 7.6 SP2 HF3:

PR number

AP01087105	AP01277237	AP01279775	RQ AP01328793
AP01191356	AP01184402		

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Error corrections compared to SW 7.6 SP2 HF2:

PR number

AP01048638	AP01213618	AP01238521	AP01225413
AP01251880	AP01225024	AP01184402	AP01156006
AP01194832	AP00957167		

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Error corrections compared to SW 7.6 SP2 HF1:

PR number

AP01156522	AP01182954	AP01186626	AP01194832
AP01192286	AP01200229	AP00949865	AP01156006
AP00917729	AP00980564	AP01181578	AP00787366

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Error corrections compared to SW 7.6 SP1:

PR number

AP00513257	AP00513901	AP00578380	AP00784698
AP00810591	AP00908482	AP00932136	AP00957167
AP00957907	AP00962074	AP00962850	AP00963839
AP00963892	AP00967364	AP00969074	AP00975001
AP00984501	AP00984648	AP00986307	AP00986338
AP00989381	AP00990091	AP00995025	AP01000683

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AP01001889	AP01007580	AP01016854	AP01024095
AP01027876	AP01031557	AP01033552	AP01033841
AP01034379	AP01046165	AP01048638	AP01058184
AP01060371	AP01066921	AP01077539	AP01082369
AP01090131	AP01100448	AP01101134	AP01101613
AP01111432	AP01115098	AP01117569	AP01141933
AP01151559			

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Compatibility  
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- The HMI-Advanced-SW 7.6 SP2 HFx can be combined with 840D sl NCU 7x0.1 / .2 / .3 from CNC SW 1.4 SP1 to SW 2.7 SPx, 810D / 840D as from SW 6.5, 840Di sl SW 1.4. Exclusively for drive commissioning, a combination with NCU 7x0.3 with CNC SW 4.x can also be used.
- The help system is based on the documentation for CNC SW 2.7 (solution line) resp. 7.4 (powerline version)
- The NC alarm texts are based on NCU SW 2.7 (solution line) resp. 7.4 (powerline version)
- The HMI Advanced SW 7.6 SP2 HFx can run on PC / PG with WinXP SP3 resp. Windows 7
- The HMI Advanced SW 7.6 SP2 HFx only supports "new design".
- The simulation is based on the 840D sl CNC SW 1.4 SP1 / 2.4 SP1 resp. 840D NC-SW 7.4 (internal version 67.00). Please read the note provided under "System" !

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Notes  
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System:

- When editing the parts program selected in an NC channel, the NC start is now also disabled for solution line. In order to receive an NC alarm (14005 "Program-specific start disable set"), bit 6 must be set for NC-MD 11411 (\$MN\_ENABLE\_ALARM\_MASK).
- Language extensions V7.6.1 cannot be used. Language extensions V7.6.2 are required.
- When operating solution line CNC software V 2.5 (or later) and using cycle support resp. simulation, cycles V 7.5 must be installed in the NCU. Cycles V 2.x may not be operated.  
IMPORTANT:  
In CNC Software Version 2.6 SP1 (or later), the technological, measuring, ISO and JobShop cycles 2.6 are installed automatically. This automatic installation can be deactivated in the NCU by entering the Linux service command "sc disable s\_cycles" and performing a subsequent general NC reset. Only then can the cycles 7.5, which are included in the HMI Advanced, be loaded.  
When creating an NC archive, all cycles included in the NC are also stored as before.  
As the Siemens cycles 2.6 – if not yet deactivated – are already provided in the general reset status of the NC, you are prompted if you wish to overwrite the cycles when reading in the NC archive. This is not a system error.
- When operating CNC-SW 2.6 SP1 with multitools, a # character is displayed in the HMI Advanced tool management screens because HMI Advanced does not know any multitools. This is not an error.
- The editor can only display characters included in the European code page 1252.
- The first selection of the online help after HMI startup may be incorrect and lead to a description of alarm 1000. Any further selection will be correct.
- When reading in an NC series commissioning archive (with the GUDs included), "Communication Error 200" is output when using a Powerline NCU / CCU MPI interface with NC software version 6.5 (NC software problem).
- Expand user interface (Wizard):  
To ensure compatibility with HMI Advanced 6.4, the following entry is provided in the wizard.ini file for configuring the Recall button:  
[WIZARD\_BEHAVIOR]  
Recall\_With\_Autom\_Exit=1  
0 ... Recall without automatic exit

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1 ... Recall with automatic exit

The standard setting is 1

- The simulation is no longer offered if HMI Advanced is connected to an NCK with an internal version exceeding 72.xx.yy. In this case, the simulation can be activated in the dpdh.ini file via the entry  
[Main]  
enableSimulation = 1
- New function of the master control "Terminate pending tasks":  
Tasks which get stuck in the exit request or which do not react are not necessarily terminated by the master control and thus continue to run. On the one hand, this can unnecessarily delay the shutdown process. On the other hand, this may lead to problems during productive operation, if – due to insufficient system resources - selected tasks must be terminated when switching over the operator areas (TerminateTask). Problems may also arise during HMI startup, when operating a PCU in service mode or with PG/PC installations, if a task remains from a previous shutdown. We have extended the master control accordingly to improve this situation. We have implemented two terminate functions which are only activated if the regie.ini includes the relevant configuration.

#### 1. Task-specific terminate

The configuration is performed in the task/startup configuration of the regie.ini. The attributes "ShutdownTimeout" and "ForceExit" are provided for this. The ShutdownTimeout indicates how long the master control shall wait for task completion following output of the exit signal. Upon expiry of this time period, the master control terminates the task if ForceExit has been configured additionally

Example for *regie.ini*

[StartupConfiguration]

Startup7 = name:= mmcenv, Timeout:= 25000, ShutdownTimeout:= 100, ForceExit:= True

#### 2. Resource analysis

The configuration is performed in the regie.ini. The general attribute "SweepOnExit" is provided for this. The resource analysis is performed immediately prior to completion of the master control as the last action. All still running master control tasks are identified and terminated here. Subordinated processes (child) are not terminated here.

Example for *regie.ini*

[Miscellaneous]

SweepOnExit = True

#### SINAMICS commissioning:

- Drive data are stored in parallel (Sinamics >=2.60.36). The relevant entry is included in the ib.ini, section:  
[Softkeys]: SaveParallel=1 //→ (Default setting)  
SaveParallel=0 (that means, data are still stored sequentially)
- ReadOnly MD resp. MD for which the write access level is insufficient are grayed. This concerns machine data, Sinamics drive parameters and user views.
- Commissioning area, settable options for drive unit configuration in the file mmc.ini:

##### **[snxtopo]**

##### **NumEds = #**

=> During the drive unit configuration, # EDS are set up for each servo DO.

The entry defines the number of encoder data sets which are generated for each servo DO.

The entry must be set to 2 at least to activate the creation of several encoder data sets:

The entry is only active for servo DOs that already contain an encoder data set (drive parameter of the DOs p0140=1 and p0141[0] != 0).

##### **NumDds = #**

=> # DDS are generated for each servo DO during drive unit configuration.

The entry defines the number of drive data sets which are generated for each servo DO.

The entry must be set to 2 at least to activate the creation of several drive data sets:

##### **LineModuleQuickCommissioning = true**

=> Fast infeed commissioning

If the Control Unit is provided with an infeed unit (Line Module), fast infeed commissioning is performed during drive unit configuration.

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**AlternativeTerminalWiring = 1**

=> Alternative standard terminal wiring of the terminals X122.1(DI 0) X122.2 (DI 1) via the CU/CU-NX parameter 8511.

The option is evaluated in the drive unit configuration and when setting the default values in the Inputs / Outputs screen.

SINAMICS archive in ASCII:

If the internal ASCII converter detects that drive archive data have been modified (e.g. with SinuCom Arc) and errors have occurred when converting data from ASCII to ACX, the following text is output in the error log:

"Note: Archive contains modified drive data."

If the converter detects that the archive data do not match the internal description file for conversion, the ASCII converter generates an ACX file which is copied onto the controller

When the ACX files have been copied successfully, the following messages are output upon completion of series commissioning:

"Note: Drive archive description and values are inconsistent."

"The drive archive has been loaded."

An error message which can be ignored is output because these texts are included in the error log and an NCK reset is output.

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Function 1:n for solution line

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- An HMI Advanced can be switched to a maximum of four NCUs.
- The NC and drive start-up must be performed in the mode 1:1. The 1:n operation may be activated only after completion of the start-up.
- Drive alarms from an NCU not currently connected with the HMI will be indicated as a group alarm. After switching the HMI to the associated NCU, the drive alarms will then be displayed in resolved form with all details.
- The FB9 PLC block may not be used (FB9 must not be active) to switch an MCP using the HMI. The MCP switching may need to be realized in the PLC user program.

## Remedy:

In the OP100 (FB1), set MCP1Adr. to 255 and MCP1stop to true.

In the OP1, query the "MMCBTSSready" signal (DB10.DBX108.3). If this is set, write MCP address from DB19.DBB123 (MCP index) to the DB7.DBB27 and then remove the MCP stop bit DB7.DBX62.1. MCP is now active.

If the "MMCBTSSready" signal (DB10.DBX108.3) is now removed again (HMI switches to another NCU), the MCP stop bit DB7.DBX62.1 must be set again.

Activation of the function in mmc.ini:

[Global]

NcddeMachineName = MachineSwitch

NcddeDefaultMachineName = net:NCU\_1

NcddeMachineNames = net,NCU840D

Sample netnames.ini for one HMI on three NCUs:

[own]

owner= HMI\_1

; Description of possible connections

[conn HMI\_1]

conn\_1= NCU\_1

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```
conn_2=   NCU_2
conn_3=   NCU_3
```

```
[param HMI_1]
mmc_address= 1
```

```
[param NCU_1]
nck_address= 192.168.214.1,LINE=10,NAME=/NC,SAP=030d,PROFILE=CLT1__CP_L4_INT
plc_address= 192.168.214.1,LINE=10,NAME=/PLC,SAP=0201,PROFILE=CLT1__CP_L4_INT
name=Machine_1
```

```
[param NCU_2]
nck_address= 192.168.214.2,LINE=10,NAME=/NC,SAP=030d,PROFILE=CLT1__CP_L4_INT
plc_address= 192.168.214.2,LINE=10,NAME=/PLC,SAP=0201,PROFILE=CLT1__CP_L4_INT
name=Machine_2
```

```
[param NCU_3]
nck_address= 192.168.214.3,LINE=10,NAME=/NC,SAP=030d,PROFILE=CLT1__CP_L4_INT
plc_address= 192.168.214.3,LINE=10,NAME=/PLC,SAP=0201,PROFILE=CLT1__CP_L4_INT
name=Machine_3
```

```
.*****
;
; ChanMenu
.*****
;
[chan HMI_1]
DEFAULT_logChanSet = Machine_1
DEFAULT_logChan   = NCK1.1
ShowChanMenu     = true
logChanSetList   = Machine_1, Machine_2, Machine_3
```

```
[Machine_1]
logChanList      = NCK1.1
```

```
[NCK1.1]
logNCName        = NCU_1
ChanNum          = 1
```

```
[Machine_2]
logChanList      = NCK2.1
```

```
[NCK2.1]
logNCName        = NCU_2
ChanNum          = 1
```

```
[Machine_3]
logChanList      = NCK3.1
```

```
[NCK3.1]
logNCName        = NCU_3
ChanNum          = 1
```