_____

SINUMERIK 840D sl, NCU system software for 6 axes	)	6FC5850-1XG20-2YA0
with HMI sl, in 6 languages, on CF card; with license	) Export	6FC5850-1YG20-2YA0
SINUMERIK 840D sl, NCU system software for 31 axes	)	6FC5850-3XG20-2YA0
with HMI sl, in 6 languages, on CF card; with license	) Export	6FC5850-3YG20-2YA0
SINUMERIK 840D sl, NCU System Software for 6/31 axes	)	6FC5850-3XC20-2YA
with HMI sl, in 6 languages, on DVD; without license	) Export	6FC5850-3YC20-2YA8

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Changes in HF1 compared to NCU-SW 2.4 SP1
HF1 (internal version 2.04.01.01.001) includes the following components:
- NCK software V67.07.03
- MCP Client V01.04.18
- HMI sl V02.01.01.01.001

Fault correction:
NCK
AP00511365   ASUB start from PLC or ProgEvent cancels PLC axis motion (e.g. from FC18) with error code 30dez.

MCP Client
Dead times are avoided when the IP address for the MCPs is determined using DNS
Sporadic deadlock during MCP changeover

HMI sl
AP00512008   ASCII Editor: Renumbering changes the part program
AP00513259   PCU 321: Veto mode does not work during TCU changeover

Installation of HF1:
An NCU SW 2.4 SP1 is upgraded to 2.4 SP1 HF1 as described below in section 1.2.
_____

Information about installing and operating the software on SINUMERIK NCU 710.2, NCU 720.1, NCU 720.2, NCU 720.2 PN, NCU 730.1, NCU 730.2 and NCU 730.2 PN.
Version 2.4 SP1 of the NCU software (internal version 02.04.00.01.016) consists of the following components:
- LinuxBase (NCU) V02.10.17
- NCK software V67.07.03
- PLC-BeSy V20.70.35(PLC317) **/** V26.90.06(PLC319)
- PLC-FB15 V01.04.11(PLC317) / V01.04.11(PLC319)
- CP V01.32.02
- MCP Client V01.04.18
- SINAMICS Software V02.40.50.00
- HMI sl V02.01.01.001
- Adapting Cycles V07.01.09

1. Installation of the NCU software:
To install the NCU software, you need the NCU service system V02.20.13 or higher on a USB stick.
The new installation can only be carried out with the NCU service system and TCU. Upgrade of an existing NCU system V2.3 has not been planned.

1.1 Installation of the NCU service system on USB stick:
The NCU service system is stored as a USB stick image in directory emergency_bootsys_ncu on the supplied

DVD. The copy routine installdisk.exe is stored in the same location. Connect a USB stick 512MB or 1GB, recommended type Siemens 6ES7648-0DCx0-0AA0, to your programming device or PC (with Windows XP) and note down the letter of the drive to which the stick is connected. Run routine installdisk to copy the NCU service system to the USB stick:

installdisk --verbose --blocksize 1m <Image file> <Drive letter:>

(-- means 2x minus sign)

Example:

installdisk --verbose --blocksize 1m D:\ emergency_bootsys_ncu\linuxbase-512M.img X:

It is best to copy the image in a DOS shell.

For this, you require administrator rights on your PG / PC.

After completion of installdisk remove the USB stick from the PG / PC and insert it again. Under Windows you can now see an empty USB stick. Now copy the desired NCU software (file with extension .tgz) from directory ncu_sw on the delivered DVD to this USB stick.

The USB stick can be connected to one of the two USB connectors of the NCU 7x0. The NCU will boot from this USB stick after power ON. The system operates either via a TCU that is connected to the NCU, or via PG / PC through WinSCP under "Open Terminal".

Instructions on how to use the NCU service system can be found in documentation /IM7/ on the DVD supplied.

1.2 Upgrading an NCU 7x0 with NCU-SW 2.4 HFx

The upgrade retains all user data on the CF card in the directories /user, /addon, /oem and the license key.

When upgrading systems with a number of NCUs / PCU 50s, please refer to section 7.2 Networking.

- o   Boot the NCU from the USB stick (see 1.1).
- o   Select the service shell by pressing F2 / softkey 2.
- o   Log on as user "manufact". An external keyboard may be required for this, as user names must be written in lowercase letters.
- o   Enter the following command after the operator prompt $ of the service shell:
      sc restore -update /data/<ncu-sw>.tgz
      The software update has finished when the prompt $ reappears.
- o   Remove the USB stick.
- o   Boot the NCU (F3 / softkey 3 "Restart").
- o   You can now start the PLC, drives and NC.

1.2.1 Upgrading with WinSCP

Systems without TCU at the NCU can be upgraded with WinSCP, for example on a PCU 50. For this purpose, log on at the NCU with WinSCP as "manufact" and copy the required NCU software (file with extension .tgz) from directory ncu_sw of the delivered DVD to /card/user/system/home/manufact on the NCU. Then enter the following command under Commands / Open Terminal:

sc restore -update -force <ncu-sw>.tgz

The software installation has finished when the message "Syncing disks .... done" appears. The NCU then has to be rebooted. The file <ncu-sw>.tgz on the NCU should be deleted again.

Note: Messages may appear during the installation stating that the communication peer has not responded for some time. These can be ignored. Please do not break the connection on account of such messages.

1.3 New installation of NCU software 2.4 SP1 on CF card

IMPORTANT: This procedure completely deletes anything existing on the CF card; this applies for an empty CF card as well.

- o   Boot the NCU from the USB stick (see 1.1).
- o   Select the service shell by pressing F2 / softkey 2.
- o   Log on as "manufact" user; if the CF card is empty use "admin", password "SUNRISE" instead. An external keyboard may be required for this, as user names must be written in lowercase letters.
- o   Enter the following command after the operator prompt $ of the service shell:
      sc restore -full /data/<ncu-sw>.tgz
      Software installation will be completed when prompt $ is displayed again.

- o Remove the USB stick.
- o Boot the NCU (F3 / softkey 3 "Restart" or power OFF/ON).
- o When the system is started with TCU(s) for the first time, the TCU(s) must be logged on to the system. Enter the TCU name (default TCUx) and the address of an assigned MCP.
- o You can now start the PLC, drives and NC.

2. General information:
- o After new installation of NCU software 2.4 SP1 on CF card, a general reset of the NCU and PLC must be performed: Change the SIM / NCK switch into position 1, the PLC switch into position 3 and perform a power OFF/ON.
- o NCU 710 / NCU 720: The PLC program must initiate an immediate (approx. 20 sec.) reaction to alarm "2120 NCK fan alarm" by stopping the axes in a controlled manner.
- o NCU 730: The PLC program must initiate an immediate (approx. 20 sec.) reaction to alarm "2120 NCK fan alarm" by stopping the axes in a controlled manner, if **NO** double fan module is used.
- o NCU 710 / NCU 720: The NCU will not power up if a fan module is not installed or if the fan is defective. This applies for NCU 730 with double fan module only in the case of failure of both fans.
- o Alarm 15122 "%1 data have been restored, of which %2 machine data, %3 error"
  If %3 indicates that more than zero errors have occurred, it is not advisable to continue working with the data. To avoid further problems, you should read in an up-to-date backup copy of the data.
- o It is not always possible to port an NCK series startup file from 840D powerline without processing to 840D sl.
- o Prior to overwriting a licensed CF card, a backup of the license key is absolutely necessary. The key is available in file 'keys.txt' and is stored under the path *card/keys/sinumerik*
  The backup of the key can be carried out, for example, with WinSCP, by the PG / PC.
- o Each license is assigned to a specific CF card (card ID) and is valid only on the assigned card.
- o Mini handheld unit
  An additional hardware is now required to operate a mini handheld with handwheel. As previously the inputs are connected directly to the PLC I/Os or can alternatively be integrated into the input image of the MCP IE (X51…) using a relevant connection kit. For transmitting the handwheel signals a machine control panel (Ethernet or PROFIBUS) or a handwheel connection module is now required.
- o Data backups should be read in in the order NC, PLC, drive. It will therefore make sense to create the archives NC, PLC and drive separately.
- o Contour handwheel and speed override with handwheel has only been released with PROFIBUS MCP.
- o A template of the current standard basesys.ini is available in the catalog /siemens/system/etc.
- o With networked systems it is advantageous to assign names to the individual stations in the basesys.ini (e.g. hostname=NCU-2).
- o Before networking systems, the following entry must be commented into the basesys.ini for the DHCP master: "SyncModeDHCPD_SysNet=ON_MASTER". The start-up sequence for the first power up after networking is DHCP master (previously DHCP server), followed by the other stations.
- o The reset button on the NCU enables the NCU module to be restarted. It is not certain that this will restart the complete system in all configurations.
- o Das Ethernet handwheel of the HT2 is jumpered on the fifth handwheel interface.
  Example of three Ethernet handwheels. The third handwheel is in the HT2:
  MD11350[0]=7   11351[0]=1   11352[0]=1
  MD11350[1]=7   11351[1]=1   11352[1]=2
  MD11350[2]=7   11351[2]=1   11352[2]=5
- o HT2: The PLC application example for the HHU (=BHG) contained in the powerline toolbox cannot be transferred to the HT2 without modifications. The variable descriptions of the NCVAR have to be adapted. In the I/O process image of the HT2, the bit EBn+5.7 must be written to zero and ABn+1.7 must be toggled from the PLC program.
  The FC13 supports the visualization of two lines. The display can be increased to four lines from the I/O process image.
  Example of parameter settings on the FB1:

```
BHG                 :=5
BHGIn               :=DB100.BhgIn_170
BHGOut              :=DB100.BhgOut_150
BHGStatSend         :=DB100.DBD80
BHGStatRec          :=DB100.DBD84
BHGInLen            :=
BHGOutLen           :=
BHGTimeout          :=
BHGCycl             :=
BHGRecGDNo          :=2 // corresponds to the setting of the rotary switch * the connection box of the MPP.
BHGRecGBZNo         :=2 // corresponds to the setting of the rotary switch * the connection box of the MPP.
BHGRecObjNo         :=1
BHGSendGDNo         :=2
BHGSendGBZNo        :=1
BHGSendObjNo        :=1
BHGMPI
BHGStop
BHGNotSend
```

* The rotary switches S1 and S2 determine the DIP number with which the station is logged onto the system (here S1=0, S2=2).

o   Alarm 46xx: The machine data for the Ethernet handwheel must be checked.
    Example for the first handwheel: MD11350[0]=7, 11351[0]=1, 11352[0]=1

o   Combinations of NCUs with SINAMICS Sxxx CUs have not been released.

3. Information about the NCK:
   o   If the number of part programs set via machine data nearly matches the currently available number, the value must be increased in the machine data (due to additional cycles).
   o   Interpolatory movement of positioning axis is prevented with the alarm 8031 "...Axis has no IPO functionality."
   o   SPI and PW have (always) been key words and cannot be used as axis identifiers.
   o   Function G643 (block-internal smoothing) has been released for applications in the tool change area (e.g. optimizations for approaching the tool change position). The function has not been released for applications in the machining process.
   o   Function G644 (smoothing at max. possible dynamics) has been released for applications in the tool change area (e.g. optimizations for approaching the tool change position). The function has not been released for applications in the machining process.
   o   Software variant 6 axes max.: The default setting for the number of axes is 3.
   o   The "Extended measurement" function with distributed measuring input on the SINAMICS modules is not available (MEAC, MEASA, MEAWA).
   o   Gaps in the channel sequence are not permitted in systems with a maximum of two channels.
   o   Access to drive data via system variable $nn_nn is not enabled. The only available system variables are those transferred in telegram 116.
   o   ESR is not enabled.
   o   ASUBs can now be started along the line of the 840Di functionality via the PROFIBUS PLC I/Os. Machine data settings must be selected by the same method used on the 840Di system. There are no high-speed NCK I/Os mapped in DB10 of the PLC. However, the ASUB start options used in earlier versions (i.e. from DB10 or FC9 via PLC program) are still available.
   o   With a 31-axis software on an NCU 710.1 you can use 6 out of 31 axes and 2 out of 10 channels.
   o   Software variant 31 axes 10 channels:
       Functional in principle, but a number of axes >18 (including 8 safety axes) only after request.
   o   Machine data 10008 $MN_MAXNUM_PLC_CTRL_AXES is no longer included in the data record. It has been replaced by MD19160.
   o   If tool data are missing after series startup read-in (created with NCK < 62.13.00), the file must be read in again with HMI Advanced and without deleting the NC.

o MD 10062 $mn_posctrl_cycle_delay must be zero. Check the available data backup.
o Machine data 32250 $ma_rated_outval[ ] must have value zero.
o IMD (integrated monitoring & diagnostics):
  Feedback in GUD variable _PM_MISSING_TOOL_REFRESH after writing the variables to "1" is updated only after image change.
o Safety: There is a new option handling referring to synchronized actions or synchronized action elements. Up to version 1.3 (NCK 62) synchronized action level 2 was set automatically at the same time with option SI. Thus, channel MD 28250, NUM_SYNC_ELEMENTS could be set to a value > 159. This has been changed with NCK version 67. Synchronized action level 2 is no longer included in Safety. Instead there is a new machine data, in which the synchronized action elements for SAFE.SPF are defined, i.e. MD 28251, NUM_SAFE_SYNC_ELEMENTS.
  This machine data can be written with a max. value of 500 for option SLP_I_O=1, and with a max. value of 5000 for option SPL_I_O=2.
  However, the number of synchronized action elements required should be determined in order to prevent the performance from being loaded unnecessarily.
  The checksums 36998[1]/36999[1] also have to be manually set to zero.

  With system variable $AC_SAFE_SYNAC_MEM the relevant number of free SI synchronized action elements can be read.
  If this variable is called prior to starting and after running SAFE.SPF, the difference is the number of elements occupied by SAFE.SPF. This difference adding a certain reserve should be entered in MD 28251.
o Index 1-5 must be indicated when writing MD 35300 via synchronized actions.
o Safety: Changed check sums of Safety integrated in the drive.
  The check sum for these functions must be confirmed again due to new drive-integrated safety functions.
  In order to do this enter "95" (safety start-up) in parameter p10.
  Afterwards the parameters of the current check sum must be copied to the parameters of the planned check sum.
  p9798 to p9799
  p9898 to p9899
  Then reset p10 to zero. This will automatically save the values (p971=1 is set). Wait for the process of saving to be completed.
o The HT2 can be used as a handheld unit as from software version 2.4 SP1. The HT2 is booted from the master (see general notes on networked systems) as a function of the setting in the basesys.ini. The master can be an NCU or a PCU 50.
o Data loaded from a workpiece directory are not power failsafe.
  Example:
  R parameters are loaded from a workpiece directory and predefined with values. These values are changed during the program. After power fail and a restart, the R parameters are given the original (predefined) values. The similarly applies to tool data initialized from the WPD.

o Auxiliary function M6 is no longer output by default after block search.
  Remedy: Change an auxiliary function group in MD 22040 $mc_auxfu_predef_group[5] to a free group.
o Released NCK and HMI options:
  6FC5800-0AA00-0YB0 - 1 axis / spindle in addition
  6FC5800-0AB00-0YB0 - positioning axis/auxiliary spindle in addition
  6FC5800-0AC00-0YB0 - 1 operating mode group (BAG) in addition
  6FC5800-0AC10-0YB0 - 1 processing channel in addition
  6FC5800-0AC70-0YB0 - 'SI axis/spindle' 1 axis/spindle each in addition
  6FC5800-0AD00-0YB0 - 2MB CNC user memory in addition
  6FC5800-0AD10-0YB0 - 128KB PLC user memory in addition
  6FC5800-0AM00-0YB0 - Program preprocessing
  6FC5800-0AM01-0YB0 - Travel to fixed stop (with force control)
  6FC5800-0AM02-0YB0 - Pair of synchronized axes (gantry axes)
  6FC5800-0AM03-0YB0 - Master-slave for drive systems

6FC5800-0AM05-0YB0 - Setpoint exchange
6FC5800-0AM06-0YB0 - Tangential control
6FC5800-0AM07-0YB0 - Limit switching signals / cam controller
6FC5800-0AM08-0YB0 - Contour handwheel (restricted release)
6FC5800-0AM13-0YB0 - Advanced Positioning Control
6FC5800-0AM14-0YB0 - Synchronous spindle / multi-edge turning
6FC5800-0AM15-0YB0 - Multi-axis interpolation (> 4 axes)
6FC5800-0AM16-0YB0 - Spline interpolation for 3-axis processing
6FC5800-0AM17-0YB0 - Spline interpolation for 5-axis processing
6FC5800-0AM18-0YB0 - Polynomial interpolation
6FC5800-0AM20-0YB0 - Master value coupling and curve tables
6FC5800-0AM21-0YB0 - Involute interpolation
6FC5800-0AM22-0YB0 - Electronic gears EG
6FC5800-0AM26-0YB0 - Machining package milling
6FC5800-0AM27-0YB0 - Transmit and peripheral surface transformation
6FC5800-0AM28-0YB0 - Inclined axis
6FC5800-0AM30-0YB0 - 5-axis machining package
6FC5800-0AM33-0YB0 - Nibbling and punching
6FC5800-0AM34-0YB0 - Reciprocation, modal and non-modal
6FC5800-0AM36-0YB0 - Synchronized actions step 2
6FC5800-0AM41-0YB0 - Analysis of internal drive values (restricted release)
6FC5800-0AM42-0YB0 – Interrupt routines with rapid lift from the contour
6FC5800-0AM43-0YB0 - Multi-mode actions
6FC5800-0AM48-0YB0 - 3D tool radius compensation
6FC5800-0AM50-0YB0 - Tool management
6FC5800-0AM52-0YB0 - Contour monitoring via tunnel function
6FC5800-0AM53-0YB0 - Path length evaluation
6FC5800-0AM55-0YB0 - Sag compensation, multi-dimensional
6FC5800-0AM60-0YB0 - Generator operation
6FC5800-0AM63-0YB0 - 'SI-Basic' including 1 axis 4 SPL I/O
6FC5800-0AM64-0YB0 - 'SI-Comfort' including 1 axis 64 SPL I/O
6FC5800-0AM72-0YB0 - Generic coupling "CP-BASIC"
6FC5800-0AM73-0YB0 - Generic coupling "CP-COMFORT"
6FC5800-0AM74-0YB0 - Generic coupling "CP-EXPERT"
6FC5800-0AM76-0YB0 - Electronic transfer (CP)
6FC5800-0AN00-0YB0 - Additional languages
6FC5800-0AP01-0YB0 - Manage network drives
6FC5800-0AP02-0YB0 - SINUMERIK HMI copy license OA
6FC5800-0AP03-0YB0 - HMI copy license CE
6FC5800-0AP12-0YB0 - Additional 256MB HMI user memory on CF card of the NCU
6FC5800-0AP28-0YB0 - Measuring cycles
6FC5800-0AP47-0YB0 - HMI pro sl runtime
6FC5800-0AP53-0YB0 - Electronic Key System (EKS)
6FC5800-0AP60-0YB0 - HMI sl runtime OA

o   Released compile cycles
6FC5800-0AM04-0YB0 - SINUMERIK NCK Runtime OA
6FC5800-0AM23-0YB0 - Axial coupling in the machine coordinate system
6FC5800-0AM24-0YB0 - Continue machining at the contour
6FC5800-0AM25-0YB0 - Double transmit
6FC5800-0AM31-0YB0 - Transformation package handling (CC RECTRA)
6FC5800-0AM40-0YB0 - Clearance control
6FC5800-0AM44-0YB0 - Transformation Paracop
6FC5800-0AM51-0YB0 - Transformation "shear kinematics two axes"
6FC5800-0AM57-0YB0 - Error compensation in the space for kinematic transformations
6FC5800-0AM62-0YB0 - PROFIBUS tool and process monitoring

6FC5800-0AM65-0YB0 - Clearance control, "free direction" in addition
6FC5800-0AN04-0YB0 - Crank interpolation "CRIP"
6FC5800-0AN12-0YB0 - Integrated tool monitoring and diagnostics "IMD light"
6FC5800-0AN13-0YB0 - Integrated tool monitoring and diagnostics "IMD base"

- o   New functions with 2.4 SP1:
  Positioning axes
  NAT routing
  Expanded NAT routing
  DP ASI link
  ELO touch
  OA package X130 new sc commands
  Change IP address ranges (DHCP)
  Name configuration in config files T:M:N
  Displacement of TCUs (tcu.ini)
  Increase TCU keyboard repetition rate
  Recognize and boot HT2
  Euchner EKS
  NCK can use 2 PROFIBUSES

- o   Functional Improvements and Further Developments:

NCK 67.02.01

	AP00301955/ERLde87234	AP00307881/ERLde83008	AP00307921/ERLde84535
AP00307933/ERLde85028	AP00307972/ERLde86650	AP00307980/ERLde86949	AP00307995/ERLde87489
AP00308000/ERLde87648	AP00313269	AP00314646	AP00319103
AP00325807	AP00331696	AP00333839	AP00334902
AP00336119	AP00336358	AP00336951	AP00339681
AP00339935	AP00340850	AP00341091	AP00341903
AP00343104	AP00343671	AP00345092	AP00345150
AP00345172	AP00345583	AP00346553	AP00347073
AP00347383	AP00347544	AP00348052	AP00348681
AP00348702	AP00348945	AP00349988	AP00350286
AP00350429	AP00350853	AP00350970	AP00351334
AP00352780	AP00353085	AP00354357	AP00354375
AP00354414	AP00354665	AP00355151	AP00355178
AP00355250	AP00355307	AP00355472	AP00355498
AP00356246	AP00356650	AP00356859	AP00358076
AP00358170	AP00358683	AP00360310	AP00360419
AP00361862	AP00362533	AP00362761	AP00364779
AP00364864	AP00365780	AP00367089	AP00367168
AP00367773	AP00367806	AP00368645	AP00368680
AP00370388	AP00371045		

NCK 67.02.02

AP00360418	AP00393188

NCK 67.03.00

AP00312979 ERLde86877	AP00335013	AP00349152	AP00350087
AP00350204	AP00350243	AP00355927	AP00357993
AP00357999	AP00358583	AP00360418	AP00360562
AP00361358	AP00362456	AP00365493	AP00365582
AP00368086	AP00368962	AP00370371	AP00370422
AP00371192	AP00374112	AP00375310	AP00376610
AP00376902	AP00376993	AP00378269	AP00378535
AP00383096	AP00383604	AP00383926	AP00384245
AP00384253	AP00384634	AP00385226	AP00385280
AP00386058	AP00387276	AP00388719	AP00390371
AP00390389	AP00390729	AP00390859	AP00390943
AP00391761	AP00392554	AP00392671	AP00392805
AP00393188	AP00393544	AP00393558	AP00393830
AP00394643	AP00395511	AP00397912	AP00405472

nck 67.04.00

AP00412529	AP00413953	AP00414090

HF2
Sinamics 2.40.43 on account of elimination of 1FE1084-4WZ91 motors.

HF5
NCK 67.05.00

AP00306971	AP00307834	AP00347714	AP00362441
AP00375145	AP00391176	AP00394498	AP00396333
AP00397689	AP00397764	AP00397804	AP00399337
AP00402828	AP00404401	AP00405056	AP00405840
AP00406354	AP00407107	AP00407116	AP00407125
AP00407168	AP00407767	AP00408079	AP00408632
AP00408669	AP00408850	AP00414353	AP00414682
AP00415149	AP00416077	AP00418142	AP00420047
AP00421803	AP00424105	AP00426811	AP00428313
AP00429502			

67.05.01
AP00438050

67.05.02
AP00452727

67.05.03
AP00464489
AP00461904

67.05.04

AP00433538	AP00456794	AP00459397	AP00459600
AP00461681	AP00464368	AP00473536	

67.05.05
AP00485367

67.06.00

AP00307789	AP00313807	AP00332345	AP00350394
AP00371866	AP00375282	AP00378695	AP00394941
AP00395090	AP00399632	AP00404178	AP00405407
AP00413217	AP00414760	AP00414907	AP00417001
AP00418119	AP00421581	AP00425628	AP00426503
AP00427096	AP00430483	AP00431553	AP00433538
AP00434127	AP00438050	AP00439073	AP00443266
AP00447408	AP00448328	AP00451079	AP00452727
AP00457473	AP00459397	AP00459600	AP00461236
AP00461681	AP00461904	AP00464489	AP00477241

67.07.00

AP00306969	AP00307787	AP00308017	AP00347260
AP00370834	AP00383031	AP00385933	AP00395538
AP00401184	AP00422102	AP00425992	AP00426130
AP00426156	AP00451923	AP00456794	AP00464368
AP00466333	AP00467126	AP00468502	AP00471166
AP00472978	AP00473536	AP00473571	AP00474051
AP00477266	AP00479474	AP00480712	AP00481717
AP00481859	AP00483328	AP00483891	AP00484085
AP00484235	AP00485058	AP00485367	AP00486453
AP00490696	AP00491618	AP00491954	AP00493097
AP00493857	AP00494173	AP00494582	AP00496153

67.07.01
AP00485687

67.07.02

AP00490106	AP00502455	AP00502685	AP00505271
AP00507477			

67.07.03
AP00511365

4. Information about the PLC:

- o The PLC operating system for the PLC 319 is now based on V2.6.
- o Tool box V01.04.06 and STEP7 V5.4 SP2 are required if NCUs 720.2 PN / 730.2 PN are used.
- o STEP7 V5.4 SP2 with Toolbox V01.04.06, setting "English language": The SL NCUs do not appear in the hardware catalog. Select "German language" setting
- o Existing projects must be reconfigured with PLC 319. For this purpose, an additional data backup of the current project should be made under STEP7. After installing the toolbox, the NCU then has to be deleted from the PLC hardware catalog, and replaced by an NCU 730.2 PN from the SINUMERIK hardware catalog. After generation and saving, this hardware configuration can then be loaded from the STEP7 project.
- o iMap data for PROFINET communication are not backed up in the PLC series startup file. The data have to be loaded with SIMATIC tools.
- o The retentive memory of the PLC 319 is limited to 256KB.
- o Deleting the PLC 319:
  After deleting the PLC by means of an operating sequence on the PLC rotary switch or from STEP7, the PLC program is then automatically reloaded.
  The PLC program is not automatically reloaded if the PLC initialization is initiated by turning the operational PLC switch to position 3 and power off/on. This then does not happen with the above-

mentioned operating sequence either.
- o Port 102 on X130 is locked as default. Port 102 has to be released if the controller is to be accessed via X130 with STEP7 or an HMI.
  This can be achieved by the following entry in the /user/system/etc/basesys.ini file:
  [LinuxBase]
  FirewallOpenPorts=TCP/102.
- o The current cycle time is no longer available in DB5, but in DB8 instead. The cycle time can also be called via the start information of OB1.
- o Activating the target configuration <> actual configuration function causes the PLC to stop.
  Remedy: run the test in the user program (e.g. with the SIMATIC modules FC125, FB125 in the corresponding fault OBs).
- o The PLC module IM153-2 MLFB 6ES7 153-2AA02-0XB0 cannot be used.
  Remedy: 6ES7 153-1AA03-0XB0

- o The PLC series startup file must be generated when the PLC is stopped.
  It cannot otherwise be guaranteed that the PLC will switch to cyclic operation when the data backup has been loaded.
- o The relevant DDS / MDS must be set up in the drive.
  P827[0] ⇔ P827[1] ⇔ P827[n] must be set to different values.
  The contactor is switched over by the application.   => P833, Bit0=1
  The pulses are disabled by the drive   => P833, Bit1=0
  Initial PLC position: Star mode, therefore set bit 21.5 in the axis DB to "1" during power-up.
- o Use service interface X127 for STEP7 only.
- o The machine control panel (MCP) is operated on PROFIBUS or Ethernet. No mixed operation!
- o The 'Exchange object' function in the PLC hardware configuration has not been released.
- o PROFIBUS 1 must be configured so that the CU, supply and drive softkeys are displayed at the HMI.
- o Software version 2.4 HF8 or 2.4 SP1 must be used with NCU 7x0.x PN.
- o PROFIBUS diagnostics with FB125 are not possible with PLC 319.
- o PLC 319, PROFInet functionality: CBA PLC communication has been released.
- o FC1010 AG_CNTRL is not enabled.

5. Information about the SINAMICS drive:
- o No parallel use of measuring functions for i and n measurement via starter and HMI Advanced. Starter measurements require a Power OFF => ON and immediate measurement with the starter. Starter measurements must not be performed after HMI Advanced measurements.
- o If a SINAMICS component is replaced and the software upgraded, the firmware release must be checked and, where necessary, the original firmware release restored.
  (Key word: Macro 150399)
  Firmware releases can be checked in the following parameters:
  Control unit   R18 ➔ Firmware release of CU
  Infeed   R128 ➔ Firmware release of infeed
  Drive MD   R128 ➔ Firmware release of power section
                   R148 ➔ Firmware release of sensor module
- o For the time being, the starter is still required for determining the motor codes.
- o Mains voltages: For smooth operation in the target country the following parameters must be set in the specified order:
  P010 = 1
  P210 = mains rated voltage in the target country
  P211 = mains rated frequency in the target country
  P340 = 1
  P3410 = 4
  P3900 = 3
  Save RAM to ROM
  Power off the system; do not power it on again until it is connected to the mains of the target country.

With the next ON command on the ALM, a mains identification is run and the determined values are saved powerfail-proof.
o The APC function increases the NCU load. Prior to using this function a performance estimate must be carried out.

6. Information about HMI sl:

o Applications for HMI sl:
Teach-in for handling systems (as with HT6), unit operator panels in the automotive industry, tool loading terminals
o The HMI sl software V2.1 SP1 is started automatically as a component of the NCU software 2.4 SP1 during power-up of the NCU7x0. HMI sl is also referred to as an "internal HMI".
o HMI sl can be operated only via a control panel with TCU connected via Ethernet to X120 on the NCU7x0.
o
o The configuring data such as PLC message and alarm texts must be stored on the CF card in the NCU in the appropriate directories under /card/user/sinumerik/hmi/... or /card/oem/sinumerik/hmi/... (see HMI sl Commissioning Manual). The file system on the CF card can be accessed in "online" mode only, i.e. when the NCU is running. The data can be transferred either by means of a USB stick or network link via the HMI operator interface (Program Manager area) or by means of a network link and the WinSCP tool. IMPORTANT: File names of configuring files must normally be written in lowercase letters.
o The option "Additional 256MB HMI user memory on CF card" is required to be able to store part programs and archives on the CF card ("local drive"). Attention: An NCK general reset deletes the option and renders the "local drive" inaccessible until the option is set again. Existing data stored on the card are not affected.
o The HMI sl must be deactivated if you are operating an NCU without TCU (i.e. with HMI Advanced on PCU 50). This is achieved by the service command "sc disable hmi".

6. 1 New functions in the HMI sl:

o Operating focus switchover with resolution switchover when operating a number of OPs with different resolutions.
o Alarm log
o Improved alarm indication for drive alarms
o Color attributes for alarms
o Improved behavior of the editor with area switchover
o Performance improvements
o HT8: Channel switchover via CPF menu

6. 6.2 Restrictions in HMI sl:

o For the startup of the SINAMICS drives, an external HMI Advanced 7.3SP1 or higher or start-up tool 7.3 SP1.
o Loadable compile cycles are not backed up or read in using NC series startup archive Because they are stored on the CF card of the NCU, and are retained on NC memory reset. They can be handled like HMI configuration data.
o Only the files under /card/user/sinamics/data are copied when creating / reading in a drive startup archive.
o Control unit management: Switching over operating units (OP with TCU and MCP) by means of the channel menu has not yet been released.
o Only one HMI may ever be active on one NCU, either the internal HMI sl or one external HMI Advanced. Exceptions: Commissioning / service; HMI Advanced for the main operating station with permanently allocated MCP and one tool loading station with HMI sl without MCP.
Note: PLC alarm 410906 "M:N: no HMI sign of life" is issued after NCK reset or restarting the HMI sl in this configuration.
o The continuous saving of the alarm log on the CF card has not been released because, in this case, the log is incomplete. The alarm log is therefore empty on every HMI restart.

7. Information about the NCU-Basesoftware (LinuxBase):
  o The Linux operating system of the NCU7x0 is also referred to as the NCU-Basesoftware, similar to the PCU-Basesoftware for the PCU 50. You will find the relevant documentation in IM7 on the supplied DVD. The NCU-Basesoftware ensures the start among other things of the NC, PLC, and HMI software during power-up as well as the booting of the TCU if it is present. The NCU-Basesoftware is user-oriented, i.e. you must log in and enter a password in order to acquire specific access authorization. This current login and password protection is only relevant for accessing a Linux service shell or the CF card using WinSCP. For commissioning and servicing activities, the login ID is "manufact" and the password "SUNRISE" (case-sensitive!). To open the Linux service shell on the TCU, press keys "Area switchover" and "Recall" (F10 and F9) simultaneously, then "Scan for Servers". The VNC Session **4** of the relevant NCU is then selected with the horizontal softkey. The NCU could look like this in the list:
  NCU-1   (192.168.214.1):**4**: OK   (VNC only)   => 2
  Another possibility is to boot the NCU service system from the USB stick.
  o For access via the network using WinSCP, enter the above-mentioned login and password on the "Session" screen. This login procedure also applies after the NCU7x0 has booted from a USB stick with the NCU service system provided that executable NCU software is installed on the CF card. If this is not the case (e.g. if the CF card is empty), enter the login ID "admin" and password "SUNRISE".
  o You can display a list of the syntax of all available service commands in the service shell by running command "sc help".

7. 1 New functions in the NCU-Basesoftware:
  o Synchronization of all NCUs and PCUs (PCU 50.3, PCU 321) in the system network with reference to DHCP server and TCU data, and name service (DNS).
  o Routing an NCU into the entire system network via X127.
  o Operation of an HT2
  o Displacement mechanism for the operation of more than four TCUs in the system network.
  o Improved date and time synchronization within the NCU.

7. 2 Networking:
  o **Please take note of the current documentation "Operator components and networking (IM5) Version 07/2007".**
  o **Important:** A PCU 50.3 in the system network must be upgraded to PCU-Basesoftware V8.1 and, if present, an HMI Advanced SW must also be upgraded to V7.3 SP1.
  o Important system and network settings of the NCU-Basesoftware are preset in the **basesys.ini** file in the directory /card/user/system/etc, and these settings may be changed there. The original basesys.ini is to be found under /card/siemens/system/etc with the name "template-basesys.ini".
  Each NCU in the system network should be given a unique ("speaking") computer name with the entry "Hostname=..." in basesys.ini. Permissible characters are upper and lower case letters, numbers and the minus sign.
  o In a machine configuration with one or more NCUs and / or one or more PCUs (PCU 50.3, PCU 321), which are to communicate with one another in the system network, they have to be configured to X120 with unique **fixed IP addresses** in the same address range (basesys.ini, InternalIP= and InternalNetMask=). All NCUs and PCUs in the system network automatically synchronize themselves with reference to the DHCP server, <u>so that it is no longer necessary to switch off DHCP servers</u>, and this should not be done.
  o Exactly **one DHCP master** (BootServer) must be defined (basesys.ini, SyncModeDHCPD_SysNet=ON_MASTER) in system networks with at least two computers (NCU, PCU).
  With the upgrade from SW 2.4, the computer which was previously the DHCP server now becomes the DHCP master. In cases of recommissioning, it is recommended to select an NCU as the DHCP master. All other computers are given the setting SyncModeDHCPD_SysNet=ON_HIGH. The setting "ON_LOW" is currently impermissible.
  Important: The NCU or PCU defined as BootServer in the system network by the entry

SyncModeDHCPD_SysNet=ON_MASTER must not be switched off or booted while the system is in productive operation.

8. Information about technology cycles:
NCU software 2.4 SP1 does not include any technology cycles (standard cycles) or measuring cycles.
However, these cycle packages can be loaded to the NC via HMI Advanced 7.3 SP1.