



FAQ • 06.2014

# Communication services

SINUMERIK 840D sl | Differences regarding SIMATIC PLC

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### Caution

The functions and solutions described in this article confine themselves to the realization of the automation task predominantly. Please take into account furthermore that corresponding protective measures have to be taken up in the context of Industrial Security when connecting your equipment to other parts of the plant, the enterprise network or the Internet. Further information can be found under the Content-ID 50203404.

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### Question

A SIMATIC PLC is integrated in the SINUMERIK 840D sl, the versions can be seen in the following overview:

- NCU7x0.2 – S7 CPU 317-2DP (FW 2.1)
- NCU7x0.2 PN – S7 CPU 319-3PN/DP (FW 2.7)
- NCU7x0.3 PN – S7 CPU 317-3PN/DP (FW 3.2 and FW 3.2+)  
– S7 CPU 319-3PN/DP (FW 3.2 and FW 3.2+)

The PLC integrated in SINUMERIK behaves in an almost identical fashion to the SIMATIC PLC. The properties of the communication services together with an overview of the differences between the two systems are shown in the following.

Which differences in the communication services exist between the SIMATIC PLC and the SINUMERIK PLC?

### Answer

To fully answer this question, follow the handling instructions and notes listed in this document.

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# 1 Direct synchronous access NCK ↔ PLC

The particular bus system can be directly and synchronously accessed from the NCK (Numerical Control Kernel). This allows synchronous I/O accesses (FastIO) to be directly processed in the NC program.

## General conditions

Table 1-1 Which I/Os can be accessed via which interfaces?

	PROFIBUS	
	PROFINET	
	PLC	NCK
<b>SINUMERIK 840D sl NCU7x0.2</b> (S7 317-2 DP v2.1)		
PROFIBUS DP1	X	X
PROFIBUS DP2/MPI	X	X
<b>SINUMERIK 840D sl NCU7x0.2 PN</b> (S7 319-3 PN/DP v2.7) from CNC SW 2.6 SP1		
PROFIBUS DP1	X	X
PROFIBUS DP2/MPI	X	X
PROFINET	X	-
<b>SINUMERIK 840D sl NCU7x0.3 PN</b> (S7 317/319-3PN/DP v3.2) from CNC SW 4.4 (2.7 SP3)		
PROFIBUS DP1	X	X
PROFIBUS DP2/MPI	X	X <sup>1)</sup>
PROFINET	X	I/O Periphery from 4.5 SP2 <sup>2)</sup>

<sup>1)</sup> with CNC SW 4.5 SP2

<sup>2)</sup> Drives planned with 4.7 SP1

## 2 SINUMERIK 840D sl – NCU7x0.2

Table 2-1 Technical data

<b>CPU and product version</b>	
• SINUMERIK NCU - order number	6FC537x-0AA00-...
• Integrated CPU	SIMATIC S7 CPU 317-2DP
• PLC firmware product version	V 2.1
• Programming package	STEP 7 from V 5.2 + SP 1 and toolbox
<b>1. Interface – DP1 (X126)</b>	
<b>DP master</b>	
• Interface type	RS485
• Number of connections	32
• Speed	12 Mbaud
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
• S7 communication (server/client)	No
• DP-V0 (cyclic)	Yes
• DP-V1 (acyclic)	Yes
• DP-V2 (isochronous)	Yes
• Number of DP slaves	256
• Length, consistent user data	244 bytes
• Isochronous	No
• Data set gateway	No
• PROFIBUS slave-to-slave communication	Yes
• Time synchronization	Yes
<b>DP slave</b>	
• Interface type	RS485
• Speed	12 Mbaud
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
• S7 communication (server/client)	No
• DP-V0 (cyclic)	Yes
• DP-V1 (acyclic)	Yes
• DP-V2 (isochronous)	takes passive part
• Length, consistent user data	244 bytes
• Isochronous	No
• Data set gateway	No
• PROFIBUS slave-to-slave communication	Yes
• Time synchronization	Yes

<b>2. Interface – DP2 (X136)</b>	
<b>MPI</b>	
• Interface type	RS485
• Number of connections	16
• Speed	12 Mbaud
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	Yes
• S7 communication (server/client)	Yes/No
• Time synchronization	Yes
<b>DP master</b>	
• Interface type	RS485
• Number of connections	32
• Speed	12 Mbaud
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
• S7 communication (server/client)	No
• DP-V0 (cyclic)	Yes
• DP-V1 (acyclic)	Yes
• DP-V2 (isochronous)	Yes
• Number of DP slaves	256
• Length, consistent user data	244 bytes
• Isochronous	No
• Data set gateway	No
• PROFIBUS slave-to-slave communication	Yes
• Time synchronization	Yes
<b>DP slave</b>	
• Interface type	RS485
• Speed	12 Mbaud
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
• S7 communication (server/client)	No
• DP-V0 (cyclic)	Yes
• DP-V1 (acyclic)	Yes
• DP-V2 (isochronous)	takes passive part
• Length, consistent user data	244 bytes
• Isochronous	No
• Data set gateway	No
• PROFIBUS slave-to-slave communication	Yes
• Time synchronization	Yes

<b>X120-HMI network</b>	
• Interface type	RJ-45
• Speed	10/100 Mbit/s
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
<b>Protocols (internal CP)</b>	
TCP/IP	
• Send/receive	Specific blocks (FC1005/FC1006)
• Put/Get	No
• Fetch/Write	Yes
UDP	
• Send/receive	Specific blocks (FC1005/FC1006), 240 bytes
• Put/Get	No
• Fetch/Write	No
ISO on TCP	
• Send/receive	Specific blocks (FC1005/FC1006), 240 bytes
• Put/Get	No
• Fetch/Write	Yes
<b>Ethernet services</b>	
• Web server	No
• I-WLAN	Yes
• E-mail:	No
• VNC	Yes
• DHCP Server/Client	Yes/Yes
• Time synchronization	Yes
• ssh (key authentication)	Yes
<b>Components</b>	
• MCP - IE/PN mode	Yes
• MPP – IE/PN mode	Yes
• HT2/HT8 – IE mode	Yes
• TCU connections	4

<b>X130 – factory network</b>	
• Interface type	RJ-45
• Speed	10/100 Mbit/s
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
<b>Protocols (internal CP)</b>	
TCP/IP	
• Send/receive	specific blocks (FC1005/FC1006), port must be activated
• Put/Get	No
• Fetch/Write	Yes, port must be activated
UDP	
• Send/receive	specific blocks (FC1005/FC1006), port must be activated, 240 bytes
• Put/Get	No
• Fetch/Write	No
ISO on TCP	
• Send/receive	specific blocks (FC1005/FC1006), port must be activated, 240 bytes
• Put/Get	No
• Fetch/Write	Yes, port must be activated
<b>Ethernet services</b>	
• Web server	No
• I-WLAN	Yes
• E-mail:	No
• VNC	Yes, port must be activated
• DHCP Server/Client	No/Yes
• ssh (key authentication)	Yes
• OPC Server	Can be optionally installed via PCU50
• Time synchronization	Yes



<b>X127 – commissioning / teleservice</b>	
• Interface type	RJ-45
• Speed	10/100 Mbit/s
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
<b>Ethernet services</b>	
• Web server	No
• I-WLAN	Yes
• E-mail:	No
• VNC	Yes, teleservice adapter
• DHCP Server/Client	Yes/No
• ssh (key authentication)	Yes

### 3 SINUMERIK 840D sl – NCU7x0.2 PN

Table 3-1 Technical data

<b>CPU and product version</b>	
• SINUMERIK NCU - order number	6FC537x-0AA01-...
• Integrated CPU	SIMATIC S7 CPU 319-3PN/DP
• PLC firmware product version	V 2.7
• Programming package	STEP 7 from V 5.4 + SP 4 and Toolbox
<b>1. Interface – DP1 (X126)</b>	
<b>DP master</b>	
• Interface type	RS485
• Number of connections	32
• Speed	12 Mbaud
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
• S7 communication (server/client)	No
• DP-V0 (cyclic)	Yes
• DP-V1 (acyclic)	Yes
• DP-V2 (isochronous)	Yes
• Number of DP slaves	124
• Length, consistent user data	244 bytes
• Isochronous	No
• Data set gateway	No
• PROFIBUS slave-to-slave communication	Yes
• Time synchronization	Yes
<b>DP slave</b>	
• Interface type	RS485
• Speed	12 Mbaud
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
• S7 communication (server/client)	No
• DP-V0 (cyclic)	Yes
• DP-V1 (acyclic)	Yes
• DP-V2 (isochronous)	takes passive part
• Length, consistent user data	244 bytes
• Isochronous	No
• Data set gateway	No
• PROFIBUS slave-to-slave communication	Yes
• Time synchronization	Yes

<b>2. Interface – DP2 (X136)</b>	
<b>MPI</b>	
• Interface type	RS485
• Number of connections	16
• Speed	12 Mbaud
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	Yes
• S7 communication (server/client)	Yes/No
• Time synchronization	Yes
<b>DP master</b>	
• Interface type	RS485
• Number of connections	32
• Speed	12 Mbaud
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
• S7 communication (server/client)	No
• DP-V0 (cyclic)	Yes
• DP-V1 (acyclic)	Yes
• DP-V2 (isochronous)	Yes
• Number of DP slaves	124
• Length, consistent user data	244 bytes
• Isochronous	No
• Data set gateway	No
• PROFIBUS slave-to-slave communication	Yes
• Time synchronization	Yes
<b>DP slave</b>	
• Interface type	RS485
• Speed	12 Mbaud
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
• S7 communication (server/client)	No
• DP-V0 (cyclic)	Yes
• DP-V1 (acyclic)	Yes
• DP-V2 (isochronous)	takes passive part
• Length, consistent user data	244 bytes
• Isochronous	No
• Data set gateway	No
• PROFIBUS slave-to-slave communication	Yes
• Time synchronization	Yes

<b>X120-HMI network</b>	
• Interface type	RJ-45
• Speed	10/100 Mbit/s
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
<b>Protocols (internal CP)</b>	
TCP/IP	
• Send/receive	Specific blocks (FC1005/FC1006)
• Put/Get	No
• Fetch/Write	Yes
UDP	
• Send/receive	Specific blocks (FC1005/FC1006), 240 bytes
• Put/Get	No
• Fetch/Write	No
ISO on TCP	
• Send/receive	Specific blocks (FC1005/FC1006), 240 bytes
• Put/Get	No
• Fetch/Write	Yes
<b>Ethernet services</b>	
• Web server	No
• I-WLAN	Yes
• E-mail:	No
• VNC	Yes
• DHCP Server/Client	Yes/Yes
• Time synchronization	Yes
• ssh (key authentication)	Yes
<b>Components</b>	
• MCP - IE/PN mode	Yes
• MPP – IE/PN mode	Yes
• HT2/HT8 – IE mode	Yes
• TCU connections	4

<b>X130 – factory network</b>	
• Interface type	RJ-45
• Speed	10/100 Mbit/s
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
<b>Protocols (internal CP)</b>	
TCP/IP	
• Send/receive	specific blocks (FC1005/FC1006), port must be activated
• Put/Get	No
• Fetch/Write	Yes, port must be activated
UDP	
• Send/receive	specific blocks (FC1005/FC1006), port must be activated, 240 bytes
• Put/Get	No
• Fetch/Write	No
ISO on TCP	
• Send/receive	specific blocks (FC1005/FC1006), port must be activated, 240 bytes
• Put/Get	No
• Fetch/Write	Yes, port must be activated
<b>Ethernet services</b>	
• Web server	No
• I-WLAN	Yes
• E-mail:	No
• VNC	Yes, port must be activated
• DHCP Server/Client	No/Yes
• ssh (key authentication)	Yes
• OPC Server	Can be optionally installed via PCU50
• Time synchronization	Yes

### 3 SINUMERIK 840D sl – NCU7x0.2 PN

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<b>X127 – commissioning / teleservice</b>	
• Interface type	RJ-45
• Speed	10/100 Mbit/s
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
<b>Ethernet services</b>	
• Web server	No
• I-WLAN	Yes
• E-mail:	No
• VNC	Yes, teleservice adapter
• DHCP Server/Client	Yes/No
• ssh (key authentication)	Yes

<b>PROFINET*</b>	
• Interface type	RJ45
• Speed	10/100 Mbit/s
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
• S7 communication (server/client)	Yes
<b>Protocols</b>	
• TCP/IP, UDP	Simatic blocks T-Send/T-Recv
<b>Services</b>	
• Number of PN devices (RT)	256
• Data length per connection, max.	1400 bytes
• Length, consistent user data	1024 bytes
• Isochronous	No
• Time synchronization	NTP client
• Controller	Yes
• I-Device	No
• CBA (partner)	Yes (32)
• RT	Yes
• IRT	No
• Min. send clock cycles	250 µs
<b>Ethernet Services</b>	
• Webserver (Clients)	Yes (5)
• I-WLAN	Yes
• eMail	No
• VNC	No
• DHCP	No
• ssh (key authentication)	No
• OPC Server	Can be optionally installed via PCU50
<b>Components</b>	
• MCP – IE/PN Modus	Yes
• MPP – IE/PN Modus	Yes
• HT2/HT8 – IE Modus	-

\* Port 1 and 2 available (1 interface)

## 4 SINUMERIK 840D sl – NCU7x0.3 PN

Table 4-1 Technical data

<b>CPU and product version</b>	
• SINUMERIK NCU - order number	6FC537x-0AA30-...
• Integrated CPU	SIMATIC S7 CPU 317-3PN/DP or 319-3PN/DP
• PLC firmware product version	≥ V 3.2
• Programming package	STEP 7 from V5.5 and Toolbox
<b>1. Interface – DP1 (X126)</b>	
<b>DP master</b>	
• Interface type	RS485
• Number of connections	32
• Speed	12 Mbaud
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
• S7 communication (server/client)	No
• DP-V0 (cyclic)	Yes
• DP-V1 (acyclic)	Yes
• DP-V2 (isochronous)	Yes
• Number of DP slaves	124
• Length, consistent user data	244 bytes
• Isochronous	Yes, PLC
• Data set gateway	No
• PROFIBUS slave-to-slave communication	Yes
• Time synchronization	Yes
<b>DP slave</b>	
• Interface type	RS485
• Speed	12 Mbaud
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
• S7 communication (server/client)	No
• DP-V0 (cyclic)	Yes
• DP-V1 (acyclic)	Yes
• DP-V2 (isochronous)	takes passive part
• Length, consistent user data	244 bytes
• Isochronous	No
• Data set gateway	No
• PROFIBUS slave-to-slave communication	Yes
• Time synchronization	Yes



<b>2. Interface – DP2 (X136)</b>	
<b>MPI</b>	
• Interface type	RS485
• Number of connections	16
• Speed	12 Mbaud
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	Yes
• S7 communication (server/client)	Yes/No
• Time synchronization	Yes
<b>DP master</b>	
• Interface type	RS485
• Number of connections	32
• Speed	12 Mbaud
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
• S7 communication (server/client)	No
• DP-V0 (cyclic)	Yes
• DP-V1 (acyclic)	Yes
• DP-V2 (isochronous)	No (planned)
• Number of DP slaves	124
• Length, consistent user data	244 bytes
• Isochronous	No
• Data set gateway	No
• PROFIBUS slave-to-slave communication	Yes
• Time synchronization	Yes
<b>DP slave</b>	
• Interface type	RS485
• Speed	12 Mbaud
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
• S7 communication (server/client)	No
• DP-V0 (cyclic)	Yes
• DP-V1 (acyclic)	Yes
• DP-V2 (isochronous)	No
• Length, consistent user data	244 bytes
• Isochronous	No
• Data set gateway	No
• PROFIBUS slave-to-slave communication	Yes
• Time synchronization	Yes

<b>X120-HMI network</b>	
• Interface type	RJ-45
• Speed	10/100/1000 Mbit/s
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
<b>Protocols (internal CP)</b>	
TCP/IP	
• Send/receive	Specific blocks (FC1005/FC1006)
• Put/Get	No
• Fetch/Write	Yes
UDP	
• Send/receive	Specific blocks (FC1005/FC1006), 240 bytes
• Put/Get	No
• Fetch/Write	No
ISO on TCP	
• Send/receive	Specific blocks (FC1005/FC1006), 240 bytes
• Put/Get	No
• Fetch/Write	Yes
<b>Ethernet services</b>	
• Web server	No
• I-WLAN	Yes
• E-mail:	No
• VNC	Yes
• DHCP Server/Client	Yes/Yes
• Time synchronization	Yes
• ssh (key authentication)	Yes
<b>Components</b>	
• MCP - IE/PN mode	Yes
• MPP – IE/PN mode	Yes
• HT2/HT8 – IE mode	Yes
• TCU connections	4

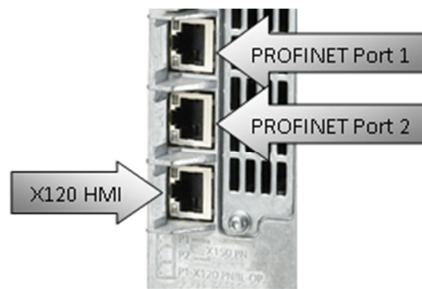
<b>X130 – factory network</b>	
• Interface type	RJ-45
• Speed	10/100/1000 Mbit/s
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
<b>Protocols (internal CP)</b>	
TCP/IP	
• Send/receive	specific blocks (FC1005/FC1006), port must be activated
• Put/Get	No
• Fetch/Write	Yes, port must be activated
UDP	
• Send/receive	specific blocks (FC1005/FC1006), port must be activated, 240 bytes
• Put/Get	No
• Fetch/Write	No
ISO on TCP	
• Send/receive	specific blocks (FC1005/FC1006), port must be activated, 240 bytes
• Put/Get	No
• Fetch/Write	Yes, port must be activated
<b>Ethernet services</b>	
• Web server	No
• I-WLAN	Yes
• E-mail:	No
• VNC	Yes, port must be activated
• DHCP Server/Client	No/Yes
• ssh (key authentication)	Yes
• OPC Server	Can be optionally installed via PCU50
• Time synchronization	Yes

<b>X127 – commissioning / teleservice</b>	
• Interface type	RJ-45
• Speed	10/100/1000 Mbit/s
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
<b>Ethernet services</b>	
• Web server	No
• I-WLAN	Yes
• E-mail:	No
• VNC	Yes, teleservice adapter
• DHCP Server/Client	Yes/No
• ssh (key authentication)	Yes

<b>PROFINET X150*</b>	
• Interface type	RJ45
• Speed	10/100/1000 Mbit/s
• PG/OP communication	Yes
• Routing	Yes
• Global data communication	No
• S7 communication (server/client)	Yes
<b>Protocols</b>	
• TCP/IP, UDP	Simatic blocks T-Send/T-Recv
<b>Services</b>	
• Number of PN devices (RT)	PLC 317 : 128   PLC 319 : 256
• Data length per connection, max.	1400 bytes
• Length, consistent user data	1024 bytes
• Isochronous	Yes (PLC), I/O periphery (Drives planned)
• Time synchronization	NTP client
• Controller	Yes
• I-Device	Yes
• CBA (partner)	Yes (32)
• RT	Yes
• IRT	Yes
• Min. send clock cycles	500 µs
<b>Ethernet services</b>	
• Webserver (Clients)	Yes (5)
• I-WLAN	Yes
• eMail	No
• VNC	No
• DHCP	No
• ssh (key authentication)	No
• OPC Server	Can be optionally installed via PCU50
<b>Components</b>	
• MCP – IE/PN Modus	Yes
• MPP – IE/PN Modus	Yes
• HT2/HT8 – IE Modus	-

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\* **X150** - Port 1 and 2 available (1 Interface)  
I-Device or PROFINET IRT are not usable in combination with CBA



## 5 Differences between the PLC functions in SINUMERIK and SIMATIC

## 5 Differences between the PLC functions in SINUMERIK and SIMATIC

Which restrictions are there in a comparison between a SIMATIC S7 PLC and a PLC integrated in SINUMERIK?

Product type	SIMATIC	SINUMERIK	SIMATIC	SINUMERIK	SIMATIC	SINUMERIK	SINUMERIK
Type	317-2 DP	NCU7x0.2	319-3 PN/DP	NCU7x0.2 PN	317F-2 PN/DP	NCU 7x0.3 PN	NCU 7x0.3 PN
PLC FW	v2.1	v2.1	v2.7	v2.7	v3.2	v3.2	v3.2+
NCU SW	-	2.x	-	2.x	-	4.4	ab 4.5 SP2
<b>Interfaces</b>							
PROFIBUS interface	2	2	2	2	1	2	2
Number of Slaves DP1/DP2	124/124	124/124	124/124	124/124	124/-	Σ 124 (DP1+DP2)	Σ 124 (DP1+DP2)
Number of PN Devices	-	-	256	128	256	128	128
<b>Memory</b>							
Work memory	512 KB	750 KB	1,4 MB	1,4 MB	1,5 MB	1,5 MB	1,5 MB
Retentive memory	256 KB	256 KB	700 KB	256 KB	256 KB	512 KB	512 KB
Load memory (MMC)	max 8 MB	-	max 8 MB	2 MB	max 8 MB	2 MB virt. MMC	2 MB virt. MMC
<b>PROFINET I/O</b>							
PN I/O and CBA Device ID	-	-	3	4	2	4	4
<b>PLC I/O</b>							
E/A restrictions	-	-	8192/8192	5700/5700 <sup>1)</sup>	8192/8192	5700/5700 <sup>1)</sup>	10240/10240 <sup>2)</sup>
Process images size	-	-	0.. 8192	0..256 Byte	0.. 8192	0.. 4079 Byte	0.. 12288 Byte
<sup>1)</sup> Maximum possible number of I/O is limited by the drives <sup>2)</sup> manually expendably, move drives > 10240 / MD adapt (select NCU with firmware 3.2+ from HW catalogue)							

## 5 Differences between the PLC functions in SINUMERIK and SIMATIC

<b>Product type</b>	<b>SIMATIC</b>	<b>SINUMERIK</b>
<b>Type</b>	<b>319F-3 PN/DP</b>	<b>NCU 7x0.3 PN /319</b>
PLC FW	v3.2	v3.2
NCU SW	-	4.7 HF1
<b>Interfaces</b>		
PROFIBUS interface	2	2
Number of Slaves DP1/DP2	124/124	124
Number of PN Devices	256	256
<b>Memory</b>		
Work memory	2,5 MB	2,5 MB
Retentive memory	700KB	700KB
Load memory (MMC)	max 8 MB	8 MB virt. MMC
<b>PROFINET I/O</b>		
PN I/O and CBA Device ID	3	4
<b>PLC I/O</b>		
E/A restrictions	8192/8192	10240/10240 <sup>2)</sup>
Process images size	0.. 8192	0.. 12288 Byte
1) Maximum possible number of I/O is limited by the drives		
2) manually expendably, move drives > 10240 / MD adapt (select NCU with firmware 3.2+ from HW catalogue)		

## 6 Overview PLC performance data

## 6 Overview PLC performance data

Manual excerpt (see chapter 7, Appendix)

Product type	SIMATIC 317-2 DP	SINUMERIK NCU7x0.2	SIMATIC 319-3 PN/DP	SINUMERIK NCU7x0.2 PN	SIMATIC 317F-2 PN/DP	SINUMERIK NCU7x0.3 PN
PLC FW	v2.1	v2.1	v2.7	v2.7	v3.2	v3.2
NCU SW	-	2.x	-	2.x	-	2.7SP3 / >4.4
<b>Execution times</b>						
for bit operation, min.	0,05µs		0,01µs		0,025µs	
for word operation, min.	0,2µs		0,02µs		0,03µs	
for fixed-point arithmetic, min.	0,2µs		0,02µs		0,04µs	
for floating-point arithmetic, min	1,0µs		0,04µs		0,16µs	
<b>Timers, counters, data areas</b>						
S7-counters	512		2048		512	
S7-times	512		2048		512	
Bit memory	4096 Byte		8192 Byte		4096 Byte	



## 7 CP integration of NCU 7x0

To connect the Ethernet interface within the NCU to the S7 PLC, the integrated CP 840D sl can be used. The special SINUMERIK FC AG\_SEND / AG\_RECV (FC1005 / FC1006) handles the data exchange from the Ethernet CP transmitted via a configured connection data.

The CP 840D sl supports the following functions and data amount:

Function	Connection	Engineering	PLC-End point	Size	Diagnosis
<b>AG-Send</b>	TCP/IP	NETPRO	FC 1005	8 kByte	NCM-Tool
”	UDP	”	”	<b>240Byte</b>	”
”	ISO on TCP	”	”	<b>240Byte</b>	”
<b>AG-Receive</b>	TCP/IP	NETPRO	FC 1006	8 kByte	NCM-Tool
”	UDP	”	”	<b>240Byte</b>	”
”	ISO on TCP	”	”	<b>240Byte</b>	”

### Hint

For the transmission of UDP data 240 bytes are available. If a larger quantity structure is needed the connection can be used directly via the S7-PLC interface X150 (T-Send/Recv).

## 8 Appendix

Table 8-1 Order numbers hardware

Order numbers	Product
6ES7317-2AJ10-0AB0	SIMATIC CPU 317-2DP (v2.1)
6ES7318-3EL00-0AB0	SIMATIC CPU 319-3PN/DP (v2.7)
6ES7317-2FK14-0AB0	SIMATIC CPU 317-3PN/DP (v3.2)
6ES7318-3EL01-0AB0	SIMATIC CPU 319-3PN/DP (v3.2)
6FC537x-0AA00-...	SINUMERIK 840D sl – NCU7x0.2
6FC537x-0AA01-...	SINUMERIK 840D sl – NCU7x0.2 PN
6FC537x-0AA30-...	SINUMERIK 840D sl – NCU7x0.3 PN
6FC5373-0AA31-...	SINUMERIK 840D sl – NCU7x0.3B PN /319

Table 8-2 Manuals

Product	Manual order number	Edition
SIMATIC CPU 317-2 DP (v2.1)	6ES7398-8FA10-8AA0	Edition 01/2006
SIMATIC CPU 319-3 PN/DP (v2.7/3.2)	6ES7398-8FA10-8AA0	Edition 2011
SIMATIC CPU 317-2 PN/DP (v3.2)	6ES7398-8FA10-8AA0	Edition 2011