# Configuration limits for products of the SIMATIC NET PC Software V8.2

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Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

**DANGER**
indicates that death or severe personal injury will result if proper precautions are not taken.

**WARNING**
indicates that death or severe personal injury may result if proper precautions are not taken.

**CAUTION**
indicates that minor personal injury can result if proper precautions are not taken.

**NOTICE**
indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by personnel qualified for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

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Note the following:

**WARNING**
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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.
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Communications partners and configuration limits for HARDNET-PB DP-Base software

Note
The communications partners and configuration limits described in this section apply to the following communications processors:
CP 5603, CP 5613 A2, CP 5613 FO, CP 5614 A2, CP 5623 and CP 5624

Communications partners
The DP master of the CP 5603, CP 5613 A2 /CP 5614 A2 and CP 5623 / CP 5624 can be operated with all certified DP slaves. The DP slave of CP 5614 A2, CP 5624 and the CP 5603 slave, CP 5613 A2 slave and CP 5623 slave can be operated with all certified DP master stations.

In the remaining sections, the modules listed above will simply be called CP 5613 / CP 5614.

1.1 Configuration limits for DP masters
Maximum length of the DP input data: 244 bytes per slave
Maximum length of the DP output data: 244 bytes per slave
Maximum length of the DP diagnostics data: 244 bytes per slave
Number of DP slaves: 124

| Theoretical maximum (station addresses 0-127) | 128 |
| One address is occupied by the CP 5613 / CP 5614 | -1 |
| Address 127 is reserved for broadcast | -1 |
| Reserve address 0 for DP master class 2 (recommended) | -1 |
| Reserve address 126 for node initialization (recommended) | -1 |
| Result | 124 |

Note
Keep to the maximum address range of STEP 7.
Maximum number of simultaneous DPC1 jobs (read/write): 1 per slave
Maximum number of simultaneous DPC2 connections (read/write): 56
1.2 Configuration limits for DP slaves

The following applies to CP 5613 and CP 5614 slaves:

- Maximum length of the DP input data: 244 bytes per slave
- Maximum length of the DP output data: 244 bytes per slave

1.3 Configuration limits for FDL

Maximum number of simultaneous jobs (sum of requests and indications) that can be en route between two stations:

<table>
<thead>
<tr>
<th>PROFIBUS profile</th>
<th>Maximum number of simultaneous jobs (sum of requests and indications)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5 Mbps DP</td>
<td>50</td>
</tr>
<tr>
<td>1.5 Mbps standard</td>
<td>50</td>
</tr>
<tr>
<td>1.5 Mbps universal DP/FMS</td>
<td>30</td>
</tr>
<tr>
<td>12 Mbps DP</td>
<td>80</td>
</tr>
<tr>
<td>12 Mbps standard</td>
<td>80</td>
</tr>
</tbody>
</table>

1.4 Other properties

Parallel operation of protocols

A maximum of two protocols can be operated at one time, for example PROFIBUS DP and PROFIBUS S7.

Note

In STEP 7 V5.x, the total number of slave inputs and outputs that can be configured is further restricted. The reason for this is the maximum memory space that STEP 7 V5.x has available for a PC.
Data transmission speeds supported

- 9.6 Kbps
- 19.2 Kbps
- 45.45 Kbps
- 93.75 Kbps
- 187.5 Kbps
- 500 Kbps
- 1.5 Mbps
- 3 Mbps
- 6 Mbps
- 12 Mbps

Parallel operation of CP 5613/CP 5614

Up to four CP 5613 / CP 5614 modules can be operated at the same time.

Bus parameters for DP slaves

The bus parameters for the DP slave part of the CP 5614 and the CP 5603, CP 5613 A2, CP 5623 slaves must be set using the PC station.
Communications partners and configuration limits for HARDNET-PB DP-Base software

1.4 Other properties
2.1 Configuration limits for DP masters

Maximum length of the DP input data: 244 bytes per slave
Maximum length of the DP output data: 244 bytes per slave
Maximum length of the DP diagnostics data: 244 bytes per slave
Number of DP slaves (CP 5611 / CP 5611 A2 / CP 5621 / CP 5711): max. 64 slaves

Note
Please keep to the maximum address range of STEP 7.
Maximum number of simultaneous DPC1 jobs (read/write): 1 per slave
Maximum number of simultaneous DPC2 connections (read/write): 56

Note
In STEP 7 V5.x, the total number of slave inputs and outputs that can be configured is further restricted. The reason for this is the maximum memory space that STEP 7 V5.x has available for a PC.

2.2 Configuration limits for DP slaves

Maximum length of the DP input data: 122 bytes
Maximum length of the DP output data: 122 bytes

2.3 Configuration limits for FDL

A maximum of 50 unprocessed FDL jobs can be en route between two stations.

2.4 Other properties

Parallel operation of protocols
A maximum of 1 protocol can be used alongside PG mode (use of STEP 7), for example PROFIBUS-S7 and PG mode.
1 SOFTNET-CP is permitted in configured mode. An additional SOFTNET-CP can be used in unconfigured mode (PG mode).
Configuration limits HARDNET-PB S7

S7 connections

A maximum of 207 S7 connections can be configured per configured application (max. 20) regardless of the number of configured modules (STEP 7 as of Version 5.1 Service Pack 4). During configuration, the SIMATIC NET OPC server counts as a "user application". This means that the maximum number of configured S7 connections over OPC is fixed at 207.

Maximum number of S7 connections that can be operated at the same time

The maximum number of S7 connections depends on the PDU size and the number of credits. The following table shows the maximum number of open S7 connections per CP 5613 for the credit values 1 and 2:

<table>
<thead>
<tr>
<th>PDU size</th>
<th>Number of S7 connections with credit 1</th>
<th>Number of S7 connections with credit 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>112</td>
<td>50</td>
<td>35</td>
</tr>
<tr>
<td>240</td>
<td>50</td>
<td>35</td>
</tr>
<tr>
<td>480</td>
<td>32</td>
<td>19</td>
</tr>
<tr>
<td>960</td>
<td>19</td>
<td>11</td>
</tr>
</tbody>
</table>

Maximum number of CPs with the S7 protocol on one PC

S7 allows operation of four CP 5613s per PC.

Parallel operation of protocols

A maximum of two protocols can be operated at one time, for example PROFIBUS DP and PROFIBUS S7.
 Configuration limits SOFTNET-PB S7

Number of S7 connections

Eight S7 connections can be operated with the SOFTNET-PB S7 product.

<table>
<thead>
<tr>
<th>PDU size</th>
<th>Number of S7 connections with credit 1</th>
<th>Number of S7 connections with credit 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>112</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>240</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>480</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>960</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

Parallel operation of protocols

A maximum of 1 protocol can be used alongside PG mode (use of STEP 7), for example PROFIBUS-S7 and PG mode.

1 SOFTNET-CP is permitted in configured mode. An additional SOFTNET-CP can be used in unconfigured mode (PG mode).
Configuration limits CP 1613, CP 1623 and CP 1628

A maximum of four CP 1613/CP 1623/CP 1628 can be used simultaneously in a programming device/PC.
Configuration limits HARDNET-IE S7

Note
All information on the "HARDNET-IE S7" product used in conjunction with the CP 1613 communications processor also applies if you use the product with the CP 1623 or CP 1628.

Data with connection establishment

When the connection is established actively with the SEND/RECEIVE job SEND_CONN_REQ, it is possible to transfer up to 32 bytes of data along with the job. This data can be received on the communications partner (passive connection establishment) with the AWAIT_CONN_REQ_TRAN or AWAIT_CONN_REQ_USER job types. This type of data transmission works only with the ISO protocol.

Connections with CP 1613, CP 1623 and CP 1628

A maximum of 207 S7 or S7-H connections can be operated per configured application (max. 20) regardless of the number of configured modules.

During configuration, the SIMATIC NET OPC server counts as a "user application". This means that the maximum number of configured S7 connections that can be operated over OPC is fixed at 207. This is only possible with STEP 7 as of Version 5.1 Service Pack 4.

The following table shows the maximum number of S7 connections depending on the number of inserted CP 1613, CP 1623 or CP 1628 network adapters.

<table>
<thead>
<tr>
<th>Number of CP 1613/CP 1623/CP 1628 network adapters</th>
<th>Number of S7 connections **)</th>
<th>Number of SEND/RECEIVE connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>2</td>
<td>240 *)</td>
<td>240</td>
</tr>
<tr>
<td>4</td>
<td>480 *)</td>
<td>480</td>
</tr>
</tbody>
</table>

*) Note: In STEP 7, a maximum of 207 S7 or S7-H connections can be configured per configured application. This means that the number of connections that can be operated over the OPC interface must also be restricted to 207.

**) Connections with PDU sizes 112, 240, 480 and 960 bytes and a credit of 1. Do not configure more connections than specified above with STEP 7 otherwise trouble-free operation of all connections is not possible.

Parallel operation of protocols

To achieve the best possible performance in process communication, we recommend that you use a separate Ethernet module for office communication.
Connections

A maximum of 207 S7 or S7-H connections can be operated per configured application regardless of the number of configured modules.

During configuration, the SIMATIC NET OPC server counts as a "user application". This means that the maximum number of configured S7 connections that can be operated over OPC is fixed at 207. This is only possible with STEP 7 as of Version 5.1 Service Pack 4.

The following table shows the maximum number of S7 connections depending on the number of CP 1613/CP 1623/CP 1628 modules inserted with credit 1 (1 SAPI-S7 job per connection).

Table 7-1 HARDNET-IE S7 REDCONNECT

<table>
<thead>
<tr>
<th>Number of CP 1613/CP 1623/CP 1628 network adapters</th>
<th>Number of fault-tolerant S7 connections **)</th>
<th>Number of fault-tolerant S7 connections (2 paths **)</th>
<th>Number of fault-tolerant S7 connections (4 paths **)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>120</td>
<td>60</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>240 *)</td>
<td>120</td>
<td>60</td>
</tr>
<tr>
<td>4</td>
<td>480 *)</td>
<td>240 *)</td>
<td>120</td>
</tr>
</tbody>
</table>

*) Note: In STEP 7, a maximum of 207 S7 or S7-H connections can be configured per configured application. This means that the number of connections that can be operated over the OPC interface must also be restricted to 207.

**) Connections with PDU sizes 112, 240, 480 and 960 bytes and a credit of 1. Do not configure more connections than specified above with STEP 7 otherwise trouble-free operation of all connections is not possible.

The following table shows the maximum number of S7 connections depending on the number of general IE modules inserted with credit 1 (1 SAPI-S7 job per connection).

Table 7-2 SOFTNET-IE S7 REDCONNECT

<table>
<thead>
<tr>
<th>Number of CP 1612/general IE network adapters</th>
<th>Number of fault-tolerant S7 connections **)</th>
<th>Number of fault-tolerant S7 connections (2 paths **)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>120</td>
<td>60</td>
</tr>
<tr>
<td>2</td>
<td>240 *)</td>
<td>120</td>
</tr>
</tbody>
</table>

*) Note: In STEP 7, a maximum of 207 S7 or S7-H connections can be configured per configured application. This means that the number of connections that can be operated over the OPC interface must also be restricted to 207.
**) Connections with PDU sizes 112, 240, 480 and 960 bytes and a credit of 1. Do not configure more connections than specified above with STEP 7 otherwise trouble-free operation of all connections is not possible.
Connections

A maximum of 207 S7 connections can be operated per configured application regardless of the number of configured modules.

During configuration, the SIMATIC NET OPC server counts as a "user application". This means that the maximum number of configured S7 connections over OPC is fixed at 207.

The following table shows the maximum number of S7 and SEND/RECEIVE connections depending on the number of network adapters inserted with credit 1 or 2 (1 or 2 SAPI S7 jobs per connection).

<table>
<thead>
<tr>
<th>Number of network adapters</th>
<th>Credit</th>
<th>Number of S7 connections</th>
<th>Number of SEND/RECEIVE connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&lt; 2</td>
<td>64 *)</td>
<td>64</td>
</tr>
</tbody>
</table>

*) Connections with PDU sizes 112, 240, 480 and 960 bytes and a credit of 1 or 2. Do not configure more connections than specified above with STEP 7 otherwise trouble-free operation of all connections is no longer possible.

Communications parameters

The values of the following parameter sets are supported:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value for SEND/RECEIVE</th>
<th>Value for S7 protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum frame length of a job</td>
<td>4096 bytes</td>
<td>112, 240, 480 and 960 bytes depending on the partner</td>
</tr>
<tr>
<td>Maximum number of simultaneous jobs per connection</td>
<td>2 jobs</td>
<td>2 jobs</td>
</tr>
</tbody>
</table>

If certain parameters deviate so that fewer system resources are required, this may mean that more system resources may be available for other parameters.

Remember that the actual user data length is less than the frame length and depends on the particular job type.

Parallel operation of protocols

A maximum of 1 protocol can be used alongside PG mode (use of STEP 7), for example SOFTNET-S7 and PG mode.

If you use PG or office communication in addition to SOFTNET-S7, the configuration limits shown above are lower.
Connections

A maximum of 207 S7 connections can be operated per configured application regardless of the number of configured modules.

During configuration, the SIMATIC NET OPC server counts as a "user application". This means that the maximum number of configured S7 connections over OPC is fixed at 207.

The following table shows the maximum number of S7 and SEND/RECEIVE connections depending on the number of inserted network adapters.

<table>
<thead>
<tr>
<th>Number of network adapters</th>
<th>Number of S7 connections</th>
<th>Number of SEND/RECEIVE connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8 *)</td>
<td>8</td>
</tr>
</tbody>
</table>

*) Connections with PDU sizes 112, 240, 480 and 960 bytes and a credit of 1 or 2. Do not configure more connections than specified above with STEP 7 otherwise trouble-free operation of all connections is no longer possible.

Communications parameters

The values of the following parameter sets are supported:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value for SEND/RECEIVE</th>
<th>Value for SAPI-S7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum frame length of a job/request</td>
<td>4096 bytes</td>
<td>112, 240, 480 and 960 bytes depending on the partner</td>
</tr>
<tr>
<td>Maximum number of simultaneous jobs/requests per connection</td>
<td>2 jobs</td>
<td>2 jobs</td>
</tr>
</tbody>
</table>

If certain parameters deviate so that fewer system resources are required, this may mean that more system resources may be available for other parameters.

Remember that the actual user data length is less than the frame length and depends on the particular job type.

Parallel operation of protocols

A maximum of 1 protocol can be used alongside PG mode (use of STEP 7), for example SOFTNET-IE S7 and PG mode.

If you use PG or office communication in addition to SOFTNET-IE S7, the configuration limits shown above are lower.
Configuration limits SOFTNET-IE PROFINET IO

Process data:
- Maximum length of the IO input data: 4096 bytes
- Maximum length of the IO output data: 4096 bytes
- Maximum number of IO devices: 64
- Maximum number of IO modules: 1024
- Maximum module size: 254 bytes
- Maximum length of the IO input data per device: < 1434 bytes (see formula)
- Maximum length of the IO output data per device: < 1434 bytes (see formula)

Formula for calculating the maximum amount of IO data per device:
The maximum amount of process data in the configuration of an IO device is decided by the maximum frame size (net 1434 bytes) and the number of modules inserted in this IO device (configuration in HW Config).

The following applies to homogeneous modules:
- The maximum length is 1434 bytes of data minus the number of inserted modules.

The following applies to mixed modules (DI/DO):
- The maximum length is 1434 bytes of data minus twice the number of inserted modules.

Examples of the calculation outlined above:
- Example of an IO device with 16 inserted DI modules:
  1434 bytes minus 16 modules = maximum 1418 bytes of user data in total via 16 submodules.

- Example of an IO device with 32 inserted DI/DO modules:
  1434 bytes minus 2 x 32 modules = maximum 1370 bytes of user data in total via 32 submodules.

- The following applies in general for n homogeneous and m mixed modules:
  1434 bytes – n bytes – 2*m bytes
Data sets:

Maximum length of the data sets 4092 bytes when reading:
Maximum length of the data sets 4096 bytes when writing:

Mode

SOFTNET-IE PN IO can only be operated in the 100 Mbps full duplex mode.

Number of network adapters

A maximum of 1 network adapter with SOFTNET-IE PN IO can be operated.

Update times for cyclic data exchange

The update time proposed by STEP 7 must be increased as follows if you have a larger hardware configuration:

- Up to 16 IO devices: 8 ms
- Up to 32 IO devices: 16 ms
- Up to 64 IO devices: 32 ms

These values are only guidelines.

Values for VMware ESXi:

Operation with less than 256 ms is not recommended.

Parallel operation of protocols

Apart from SOFTNET-IE PN IO, no other protocol may be operated at the same time otherwise the times cannot be achieved.

Office communication alongside SOFTNET-IE PN IO is also problematic since connections to PN IO devices may be lost if the NDIS communication does not leave enough CPU time for the SOFTNET-IE PN IO protocol.

It is advisable to handle additional communication via separate communications processors with separate subnets (logical or physical).
The PCs used for the measurements had the following hardware configuration:

- CPU: 3 GHz
- RAM: 1 GB

To use a large configuration with the S7 protocol, the following requirements must be met:

- CPU: at least dual core
- RAM: 4 GB
- Windows 7, 32-bit

The configuration limits have been tested under the constraints described in the following table. Configurations other than this test configuration are possible.

<table>
<thead>
<tr>
<th>Protocol</th>
<th>max. number of items/nodes</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP master class 1</td>
<td>10 000</td>
<td>• 1 CP 5613</td>
</tr>
<tr>
<td>DP master class 2</td>
<td></td>
<td>• Byte items</td>
</tr>
<tr>
<td>DP master class 1 with OPC UA</td>
<td>10 000</td>
<td>• 1 CP 5613</td>
</tr>
<tr>
<td>DP master class 2 with OPC UA</td>
<td></td>
<td>• Byte nodes</td>
</tr>
<tr>
<td>DP slave</td>
<td>7 808</td>
<td>• DP-Base-5614 slave with a maximum byte length of 244 bytes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The items are written bit-oriented (VT_BOOL).</td>
</tr>
<tr>
<td>DP slave with OPC UA</td>
<td>7 808</td>
<td>• DP-Base-5614 slave with a maximum byte length of 244 bytes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The nodes are written bit-oriented (VT_BOOL).</td>
</tr>
<tr>
<td>FDL</td>
<td>10 200</td>
<td>• All tests were performed with byte items.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 1.5 Mbps</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Universal bus profile</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 22 connections between 2 PCs alone on the bus.</td>
</tr>
<tr>
<td>PROFINET IO</td>
<td>100 000</td>
<td>Bit items, of which 65 000 items are for cyclic data and 35 000 for data records divided among 5 IO devices with CP 1616</td>
</tr>
<tr>
<td>PROFINET IO with OPC UA</td>
<td>50 000</td>
<td>Bit items, 50 000 for cyclic data divided among 5 IO devices with CP 1616</td>
</tr>
</tbody>
</table>
### Protocol limits SIMATIC NET OPC server

<table>
<thead>
<tr>
<th>Protocol</th>
<th>max. number of items/nodes</th>
<th>Constraints</th>
</tr>
</thead>
</table>
| S7 protocol                      | 1 000 000                   | • 50 connections each with 20 000 linear successive byte items.  
    • 1 000 000 items in 10 OPC groups. 100 000 items per OPC group.  
    • Protocol selection only "S7" and "XML"; this means that the S7-OPC server is configured as an "outproc" server.  
    • Configured job timeout 15 000 ms  
    • Work memory utilization of the OPC server 1.3 Gbytes |
| S7 protocol with symbols         | 500 000                     | • Configuration and download or XDB import of 50 x 20 000 = 1 000 000 OPC symbols of the type ATI.  
    • Configuration of 1 000 000 OPC symbols of the type ATI with the symbol editor, of which 100 000 are array items and 100 000 items are with deadband information (EU Low, EU High)  
    • 50 connections each with 10 000 linear successive byte items.  
    • 500 000 items in 5 OPC groups each with 100 000 items.  
    • Protocol selection only "S7" and "XML"; this means that the S7-OPC server is configured as an "outproc" server.  
    • ATI symbols without prefix and without further STI symbol files  
    • Configured job timeout 15 000 ms  
    • Work memory utilization of the OPC server 1 Gbytes |
| S7 protocol with OPC UA          | 500 000                     | • 10 connections each with 50 000 linear successive byte nodes  
    • 10 OPC UA clients each with 50 000 nodes  
    • Protocol selection only "S7" and "UA"  
    • Configured job timeout 15 000 ms |
| S7 protocol with symbols and OPC UA | 200 000                   | • Configuration and download or XDB import of 50 x 20 000 = 1 000 000 OPC symbols of the type ATI.  
    • Configuration of 1 000 000 OPC symbols of the type ATI with the symbol editor, of which 100 000 are array items and 100 000 items are with deadband information (EU Low, EU High)  
    • 4 connections each with 50 000 linear successive byte nodes  
    • 4 OPC UA clients each with 50 000 nodes  
    • Protocol selection only "S7" and "UA"  
    • Configured job timeout 15 000 ms  
    • ATI symbols without prefix and without further STI symbol files |
## Configuration limits SIMATIC NET OPC server

<table>
<thead>
<tr>
<th>Protocol</th>
<th>max. number of items/nodes</th>
<th>Constraints</th>
</tr>
</thead>
</table>
| S7 protocol alarms                            | 5 000 alarms               | • 5 000 configured S7 messages  
• Message text in 2 languages, each with maximum 256 characters  
• 10 S7 connections each with 500 messages per S7-CPU |
| S7 protocol Data Access parallel to alarms    | 100 000 items/nodes 1 000 alarms | • 5 000 configured S7 messages  
• Message text in 2 languages, each with maximum 256 characters  
• 10 S7 connections each with 10 000 items and 100 messages per S7-CPU |
| SEND/RECEIVE                                  | 20 000                      | SEND and RECEIVE on ISO and RFC 1006 connections  
The items used are all bit items. |
| SEND/RECEIVE over OPC UA                      | 20 000                      | SEND and RECEIVE on ISO and RFC 1006 connections  
The nodes used are all bit nodes. |
| SNMP                                          | 100 000                     | Communication with up to 200 SNMP devices via CP 1612 A2. If such configuration limits are used, this can cause interruptions on the connections. In this case, higher cycle and update times and timeouts to the SNMP devices must be set. |
| OPC UA                                        | Up to 500 000               | The maximum number of OPC UA clients / sessions is 100 |
| XML                                           | 30 000                      | • S7 protocol, 1 S7 connection  
• Linear sorting of the items  
• With ATI-S7 symbols a maximum of 15 000 items, maximum length of the symbol names 128 bytes |

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**Note**

For the S7 protocol with symbols and the S7 protocol with symbols and OPC UA, you can configure up to 1,000,000 items/nodes but only operate 500,000 or 200,000 items/nodes at the same time.

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**Note**

In the case of S7 protocol Data Access operated in parallel with alarms, you can configure up to 5,000 S7 messages but only operate 1,000 messages at the same time.
Ethernet networks with a maximum of 1024 participants are supported.
General information

Operation of the SIMATIC NET-DVD with VMware ESXi

During operation of the SIMATIC NET-DVD with VMware ESXi, it was established that the latency periods can fluctuate significantly. This depends on the PC, the slot, the CP and the type of operating system.

VMwares are unable to access the CPU for up to 20 seconds. To ensure that the connection does not fail, the monitoring time of the connection with this type of VMware needs to be longer.

Monitoring times, for example with PROFIBUS CPs or with SOFTNET-IE PN IO, therefore need to be significantly longer than with the Windows 7 or Server 2008 R2 operating systems. Due to the huge differences between the various platforms, no values are specified here (exception: minimum times with SOFTNET-IE PN IO).