

# Preface

## Purpose of the Manual

This manual contains all the information you will need concerning the configuration, communication, memory concept, cycle, response times and technical data for the CPUs. You will then learn the points to consider when upgrading to one of the CPUs discussed in this manual.

## Required basic knowledge

- To understand this manual, you require a general knowledge of automation engineering.
- You should also be accustomed to working with STEP 7 basic software.

## Area of application

Table 1-1 Application area covered by this manual

| CPU             | Convention:<br>CPU designations: | Order number       | as of version |          |
|-----------------|----------------------------------|--------------------|---------------|----------|
|                 |                                  |                    | Firmware      | Hardware |
| CPU 312C        | CPU 31xC                         | 6ES7312-5BD01-0AB0 | V2.0.0        | 01       |
| CPU 313C        |                                  | 6ES7313-5BE01-0AB0 | V2.0.0        | 01       |
| CPU 313C-2 PtP  |                                  | 6ES7313-6BE01-0AB0 | V2.0.0        | 01       |
| CPU 313C-2 DP   |                                  | 6ES7313-6CE01-0AB0 | V2.0.0        | 01       |
| CPU 314C-2 PtP  |                                  | 6ES7314-6BF01-0AB0 | V2.0.0        | 01       |
| CPU 314C-2 DP   |                                  | 6ES7314-6CF01-0AB0 | V2.0.0        | 01       |
| CPU 312         | CPU 31x                          | 6ES7312-1AD10-0AB0 | V2.0.0        | 01       |
| CPU 314         |                                  | 6ES7314-1AF10-0AB0 | V2.0.0        | 01       |
| CPU 315-2 DP    |                                  | 6ES7315-2AG10-0AB0 | V2.0.0        | 01       |
| CPU 315-2 PN/DP |                                  | 6ES7315-2EG10-0AB0 | V2.3.0        | 01       |
| CPU 317-2 DP    |                                  | 6ES7317-2AJ10-0AB0 | V2.1.0        | 01       |
| CPU 317-2 PN/DP |                                  | 6ES7317-2EJ10-0AB0 | V2.3.0        | 01       |

### Note

The special features of the CPU 315F-2 DP (6ES7 315-6FF00-0AB0) and CPU 317F-2 DP (6ES7 317-6FF00-0AB0) are described in their Product Information, available on the Internet at <http://www.siemens.com/automation/service&support>, article ID 17015818.

## 6.5 CPU 314C-2 PtP and CPU 314C-2 DP

### Technical data

Table 6-6 Technical data of CPU 314C-2 PtP and CPU 314C-2 DP

| Technical data                                                |                                                                                         |                                                                                         |
|---------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|                                                               | CPU 314C-2 PtP                                                                          | CPU 314C-2 DP                                                                           |
| <b>CPU and version</b>                                        | <b>CPU 314C-2 PtP</b>                                                                   | <b>CPU 314C-2 DP</b>                                                                    |
| Order number                                                  | 6ES7 314-6BF01-0AB0                                                                     | 6ES7 314-6CF01-0AB0                                                                     |
| • Hardware version                                            | 01                                                                                      | 01                                                                                      |
| • Firmware version                                            | V2.0.0                                                                                  | V2.0.0                                                                                  |
| Associated programming package                                | STEP 7 as of V 5.2 + SP 1<br>(please use previous CPU for STEP 7 V 5.1 + SP 3 or later) | STEP 7 as of V 5.2 + SP 1<br>(please use previous CPU for STEP 7 V 5.1 + SP 3 or later) |
| <b>Memory</b>                                                 | <b>CPU 314C-2 PtP</b>                                                                   | <b>CPU 314C-2 DP</b>                                                                    |
| RAM                                                           |                                                                                         |                                                                                         |
| • Integrated                                                  | 48 KB                                                                                   |                                                                                         |
| • Expandable                                                  | No                                                                                      |                                                                                         |
| Load memory                                                   | Plugged in with MMC (max. 8 MB)                                                         |                                                                                         |
| Data storage life on the MMC<br>(following final programming) | At least 10 years                                                                       |                                                                                         |
| Buffering                                                     | Guaranteed by MMC (maintenance-free)                                                    |                                                                                         |
| <b>Execution times</b>                                        | <b>CPU 314C-2 PtP</b>                                                                   | <b>CPU 314C-2 DP</b>                                                                    |
| Processing times of                                           |                                                                                         |                                                                                         |
| • Bit operations                                              | Min. 0.1 µs                                                                             |                                                                                         |
| • Word instructions                                           | Min. 0.2 µs                                                                             |                                                                                         |
| • Fixed-point arithmetic                                      | Min. 2 µs                                                                               |                                                                                         |
| • Floating-point arithmetic                                   | Min. 6 µs                                                                               |                                                                                         |
| <b>Timers/counters and their retentivity</b>                  | <b>CPU 314C-2 PtP</b>                                                                   | <b>CPU 314C-2 DP</b>                                                                    |
| S7 counters                                                   | 256                                                                                     |                                                                                         |
| • Retentive memory                                            | Configurable                                                                            |                                                                                         |
| • Default                                                     | from C0 to C7                                                                           |                                                                                         |
| • Counting range                                              | 0 to 999                                                                                |                                                                                         |
| IEC Counters                                                  | Yes                                                                                     |                                                                                         |
| • Type                                                        | SFB                                                                                     |                                                                                         |
| • Number                                                      | unlimited (limited only by RAM size)                                                    |                                                                                         |
| S7 timers                                                     | 256                                                                                     |                                                                                         |
| • Retentive memory                                            | Configurable                                                                            |                                                                                         |
| • Default                                                     | Not retentive                                                                           |                                                                                         |
| • Timer range                                                 | 10 ms to 9990 s                                                                         |                                                                                         |
| IEC Timers                                                    | Yes                                                                                     |                                                                                         |
| • Type                                                        | SFB                                                                                     |                                                                                         |
| • Number                                                      | unlimited (limited only by RAM size)                                                    |                                                                                         |

| Technical data                   |                                                                                                                      |                                                         |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
|                                  | CPU 314C-2 PtP                                                                                                       | CPU 314C-2 DP                                           |
| Data areas and their retentivity | CPU 314C-2 PtP                                                                                                       | CPU 314C-2 DP                                           |
| Flag bits                        | 256 bytes                                                                                                            |                                                         |
| • Retentive memory               | Configurable                                                                                                         |                                                         |
| • Default retentivity            | MB0 to MB15                                                                                                          |                                                         |
| Clock flag bits                  | 8 (1 byte per flag bit)                                                                                              |                                                         |
| Data blocks                      | Max. 511<br>(DB 1 to DB 511)                                                                                         |                                                         |
| • Length                         | max. 16 KB                                                                                                           |                                                         |
| Local data per priority class    | max. 510 bytes                                                                                                       |                                                         |
| Blocks                           | CPU 314C-2 PtP                                                                                                       | CPU 314C-2 DP                                           |
| Total                            | 1024 (DBs, FCs, FBs)<br>The maximum number of blocks that can be loaded may be reduced if you are using another MMC. |                                                         |
| OBs                              | See the Instruction List                                                                                             |                                                         |
| • Length                         | max. 16 KB                                                                                                           |                                                         |
| Nesting depth                    |                                                                                                                      |                                                         |
| • Per priority class             | 8                                                                                                                    |                                                         |
| • additional within an error OB  | 4                                                                                                                    |                                                         |
| FBs                              | Max. 512<br>(FB 0 to FB 511)                                                                                         |                                                         |
| • Length                         | max. 16 KB                                                                                                           |                                                         |
| FCs                              | Max. 512<br>(FC 0 to FC 511)                                                                                         |                                                         |
| • Length                         | max. 16 KB                                                                                                           |                                                         |
| Address areas (I/O)              | CPU 314C-2 PtP                                                                                                       | CPU 314C-2 DP                                           |
| Total I/O address area           | max. 1024 bytes/1024 bytes<br>(can be freely addressed)                                                              | max. 1024 bytes/1024 bytes<br>(can be freely addressed) |
| • Distributed                    | None                                                                                                                 | max. 1000 bytes                                         |
| I/O process image                | 128 bytes/128 bytes                                                                                                  | 128 bytes/128 bytes                                     |
| Digital channels                 | Max. 1016                                                                                                            | Max. 8192                                               |
| • of those local                 | Max. 992                                                                                                             | Max. 992                                                |
| • Integrated channels            | 24 DI / 16 DO                                                                                                        | 24 DI / 16 DO                                           |
| Analog channels                  | Max. 253                                                                                                             | Max. 512                                                |
| • of those local                 | Max. 248                                                                                                             | Max. 248                                                |
| • Integrated channels            | 4 + 1 AI / 2 AO                                                                                                      | 4 + 1 AI / 2 AO                                         |
| Assembly                         | CPU 314C-2 PtP                                                                                                       | CPU 314C-2 DP                                           |
| Racks                            | Max. 4                                                                                                               |                                                         |
| Modules per rack                 | max. 8; max. 7 in rack 3                                                                                             |                                                         |
| Number of DP masters             |                                                                                                                      |                                                         |
| • Integrated                     | No                                                                                                                   | 1                                                       |
| • via CP                         | Max. 1                                                                                                               | Max. 1                                                  |

| <b>Technical data</b>                                                   |                                                                                                     |                      |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------|
|                                                                         | <b>CPU 314C-2 PtP</b>                                                                               | <b>CPU 314C-2 DP</b> |
| Number of function modules and communication processors you can operate |                                                                                                     |                      |
| • FM                                                                    | Max. 8                                                                                              |                      |
| • CP (PtP)                                                              | Max. 8                                                                                              |                      |
| • CP (LAN)                                                              | Max. 10                                                                                             |                      |
| <b>Time-of-day</b>                                                      | <b>CPU 314C-2 PtP</b>                                                                               | <b>CPU 314C-2 DP</b> |
| Real-time clock                                                         | Yes (HW clock)                                                                                      |                      |
| • Buffered                                                              | Yes                                                                                                 |                      |
| • Buffered period                                                       | Typically 6 weeks (at an ambient temperature of 40 °C)                                              |                      |
| • Behavior of the clock on expiration of the buffered period            | The clock keeps running, continuing at the time-of-day it had when power was switched off.          |                      |
| • Accuracy                                                              | Deviation per day < 10 s                                                                            |                      |
| Operating hours counter                                                 | 1                                                                                                   |                      |
| • Number                                                                | 0                                                                                                   |                      |
| • Value range                                                           | 2 <sup>31</sup> hours<br>(if SFC 101 is used)                                                       |                      |
| • Granularity                                                           | 1 hour                                                                                              |                      |
| • Retentive                                                             | Yes; must be manually restarted after every restart                                                 |                      |
| Clock synchronization                                                   | Yes                                                                                                 |                      |
| • In the PLC                                                            | Master                                                                                              |                      |
| • On MPI                                                                | Master/slave                                                                                        |                      |
| <b>S7 signaling functions</b>                                           | <b>CPU 314C-2 PtP</b>                                                                               | <b>CPU 314C-2 DP</b> |
| Number of stations that can log in for signaling functions (e.g. OS)    | Max. 12<br>(depends on the number of connections configured for PG / OP and S7 basic communication) |                      |
| Process diagnostics messages                                            | Yes                                                                                                 |                      |
| • Simultaneously enabled interrupt S blocks                             | Max. 40                                                                                             |                      |
| <b>Testing and commissioning functions</b>                              | <b>CPU 314C-2 PtP</b>                                                                               | <b>CPU 314C-2 DP</b> |
| Status/control variables                                                | Yes                                                                                                 |                      |
| • Variables                                                             | Inputs, outputs, memory bits, DBs, timers, counters                                                 |                      |
| • Number of variables                                                   | Max. 30                                                                                             |                      |
| – of those as status variable                                           | Max. 30                                                                                             |                      |
| – of those as control variable                                          | Max. 14                                                                                             |                      |
| Forcing                                                                 | Yes                                                                                                 |                      |
| • Variables                                                             | Inputs, outputs                                                                                     |                      |
| • Number of variables                                                   | Max. 10                                                                                             |                      |
| Block status                                                            | Yes                                                                                                 |                      |
| Single step                                                             | Yes                                                                                                 |                      |
| Breakpoints                                                             | 2                                                                                                   |                      |
| Diagnostic buffer                                                       | Yes                                                                                                 |                      |
| • Number of entries (not configurable)                                  | Max. 100                                                                                            |                      |

6.5 CPU 314C-2 PtP and CPU 314C-2 DP

| Technical data                        |                                                                               |               |
|---------------------------------------|-------------------------------------------------------------------------------|---------------|
|                                       | CPU 314C-2 PtP                                                                | CPU 314C-2 DP |
| Communication functions               | CPU 314C-2 PtP                                                                | CPU 314C-2 DP |
| PG/OP communication                   | Yes                                                                           |               |
| Global data communication             | Yes                                                                           |               |
| • Number of GD circuits               | 4                                                                             |               |
| • Number of GD packets                | Max. 4                                                                        |               |
| – Sending stations                    | Max. 4                                                                        |               |
| – Receiving stations                  | Max. 4                                                                        |               |
| • Length of GD packets                | max. 22 bytes                                                                 |               |
| – Consistent data                     | 22 bytes                                                                      |               |
| S7 basic communication                | Yes                                                                           |               |
| • User data per request               | max. 76 bytes                                                                 |               |
| – Consistent data                     | 76 bytes (for X_SEND or X_RCV)<br>64 bytes (for X_PUT or X_GET as the server) |               |
| S7 communication                      |                                                                               |               |
| • As server                           | Yes                                                                           |               |
| • as client                           | Yes (via CP and loadable FBs)                                                 |               |
| • User data per request               | max. 180 bytes (with PUT/GET)                                                 |               |
| – Consistent data                     | 64 bytes                                                                      |               |
| S5-compatible communication           | Yes (via CP and loadable FCs)                                                 |               |
| Number of connections                 | Max. 12                                                                       |               |
| can be used for                       |                                                                               |               |
| • PG communication                    | Max. 11                                                                       |               |
| – Reserved (default)                  | 1                                                                             |               |
| – Configurable                        | from 1 to 11                                                                  |               |
| • OP communication                    | Max. 11                                                                       |               |
| – Reserved (default)                  | 1                                                                             |               |
| – Configurable                        | from 1 to 11                                                                  |               |
| • S7-based communication              | Max. 8                                                                        |               |
| – Reserved (default)                  | 8                                                                             |               |
| – Configurable                        | from 0 to 8                                                                   |               |
| Routing                               | No                                                                            | Max. 4        |
| Interfaces                            | CPU 314C-2 PtP                                                                | CPU 314C-2 DP |
| 1st interface                         |                                                                               |               |
| Type of interface                     | Integrated RS485 interface                                                    |               |
| Physics                               | RS 485                                                                        |               |
| electrically isolated                 | No                                                                            |               |
| Interface power supply (15 to 30 VDC) | Max. 200 mA                                                                   |               |
| Functionality                         |                                                                               |               |
| • MPI                                 | Yes                                                                           |               |
| • PROFIBUS DP                         | No                                                                            |               |
| • Point-to-point communication        | No                                                                            |               |

| Technical data                        |                                  |                                |
|---------------------------------------|----------------------------------|--------------------------------|
|                                       | CPU 314C-2 PtP                   | CPU 314C-2 DP                  |
| <b>MPI</b>                            |                                  |                                |
| Number of connections                 | 12                               |                                |
| Services                              |                                  |                                |
| • PG/OP communication                 | Yes                              |                                |
| • Routing                             | No                               | Yes                            |
| • Global data communication           | Yes                              |                                |
| • S7 basic communication              | Yes                              |                                |
| • S7 communication                    |                                  |                                |
| – As server                           | Yes                              |                                |
| – As client                           | No (but via CP and loadable FBs) |                                |
| • Transmission rates                  | max. 187.5 kbps                  |                                |
| <b>2nd interface</b>                  | <b>CPU 314C-2 PtP</b>            | <b>CPU 314C-2 DP</b>           |
| Type of interface                     | Integrated RS422/RS485 interface | Integrated RS485 interface     |
| Physics                               | RS 422/485                       | RS 485                         |
| electrically isolated                 | Yes                              | Yes                            |
| Interface power supply (15 to 30 VDC) | No                               | Max. 200 mA                    |
| Number of connections                 | None                             | 12                             |
| <b>Functionality</b>                  |                                  |                                |
| • MPI                                 | No                               | No                             |
| • PROFIBUS DP                         | No                               | Yes                            |
| • Point-to-point communication        | Yes                              | No                             |
| <b>DP master</b>                      |                                  |                                |
| Number of connections                 | –                                | 12                             |
| Services                              |                                  |                                |
| • PG/OP communication                 | –                                | Yes                            |
| • Routing                             | –                                | Yes                            |
| • Global data communication           | –                                | No                             |
| • S7 basic communication              | –                                | No                             |
| • S7 communication                    | –                                | No                             |
| • Constant bus cycle time             | –                                | Yes                            |
| • SYNC/FREEZE                         | –                                | Yes                            |
| • Enable/disable DP slaves            | –                                | Yes                            |
| • DPV1                                | –                                | Yes                            |
| • Transmission rates                  | –                                | Up to 12 Mbps                  |
| • Number of DP slaves per station     | –                                | Max. 32                        |
| • Address area                        | –                                | Max. 1 KB I / 1 KB O           |
| • User data per DP slave              | –                                | max. 244 bytes I / 244 bytes O |

| Technical data                                                          |                                                |                                                                                                                                                        |
|-------------------------------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                         | CPU 314C-2 PtP                                 | CPU 314C-2 DP                                                                                                                                          |
| <b>DP slave</b>                                                         |                                                |                                                                                                                                                        |
| Number of connections                                                   | –                                              | 12                                                                                                                                                     |
| Services                                                                |                                                |                                                                                                                                                        |
| • PG/OP communication                                                   | –                                              | Yes                                                                                                                                                    |
| • Routing                                                               | –                                              | Yes (only if interface is active)                                                                                                                      |
| • Global data communication                                             | –                                              | No                                                                                                                                                     |
| • S7 basic communication                                                | –                                              | No                                                                                                                                                     |
| • S7 communication                                                      | –                                              | No                                                                                                                                                     |
| • Direct data exchange                                                  | –                                              | Yes                                                                                                                                                    |
| • Transmission rates                                                    | –                                              | Up to 12 Mbps                                                                                                                                          |
| • Intermediate memory                                                   | –                                              | 244 bytes I / 244 bytes O                                                                                                                              |
| • Automatic baud rate search                                            | –                                              | Yes (only if interface is passive)                                                                                                                     |
| • Address areas                                                         |                                                | Max. 32, with max. 32 bytes each                                                                                                                       |
| • DPV1                                                                  | –                                              | No                                                                                                                                                     |
| <b>GSD file</b>                                                         | –                                              | The latest GSD file is available at:<br><a href="http://www.ad.siemens.de/support">http://www.ad.siemens.de/support</a><br>in the Product Support area |
| <b>Point-to-point communication</b>                                     |                                                |                                                                                                                                                        |
| • Transmission rates                                                    | 38.4 kbps half duplex<br>19.2 kbps full duplex | –                                                                                                                                                      |
| • Cable length                                                          | Max. 1200 m                                    | –                                                                                                                                                      |
| • User program can control the interface                                | Yes                                            | –                                                                                                                                                      |
| • The interface can trigger a break or an interrupt in the user program | Yes (message with break ID)                    | –                                                                                                                                                      |
| • Protocol driver                                                       | 3964 (R); ASCII and RK512                      | –                                                                                                                                                      |
| <b>Programming</b>                                                      | <b>CPU 314C-2 PtP</b>                          | <b>CPU 314C-2 DP</b>                                                                                                                                   |
| Programming language                                                    | LAD/FBD/STL                                    |                                                                                                                                                        |
| Available instructions                                                  | see the Instruction List                       |                                                                                                                                                        |
| Nesting levels                                                          | 8                                              |                                                                                                                                                        |
| System functions (SFCs)                                                 | see the Instruction List                       |                                                                                                                                                        |
| System function blocks (SFBs)                                           | see the Instruction List                       |                                                                                                                                                        |
| User program security                                                   | Yes                                            |                                                                                                                                                        |
| <b>Integrated I/O</b>                                                   | <b>CPU 314C-2 PtP</b>                          | <b>CPU 314C-2 DP</b>                                                                                                                                   |
| • Default addresses of the integrated                                   |                                                |                                                                                                                                                        |
| – Digital inputs                                                        | 124.0 to 126.7                                 |                                                                                                                                                        |
| – Digital outputs                                                       | 124.0 to 125.7                                 |                                                                                                                                                        |
| – Analog inputs                                                         | 752 to 761                                     |                                                                                                                                                        |
| – Analog outputs                                                        | 752 to 755                                     |                                                                                                                                                        |

| <b>Technical data</b>                               |                                                                                                      |                      |
|-----------------------------------------------------|------------------------------------------------------------------------------------------------------|----------------------|
|                                                     | <b>CPU 314C-2 PtP</b>                                                                                | <b>CPU 314C-2 DP</b> |
| <b>Integrated functions</b>                         |                                                                                                      |                      |
| Counters                                            | 4 channels (see the Manual <i>Technological Functions</i> )                                          |                      |
| Frequency counters                                  | 4 channels, max. 60 kHz (see the Manual <i>Technological Functions</i> )                             |                      |
| Pulse outputs                                       | 4 channels for pulse width modulation, max. 2.5 kHz (see the Manual <i>Technological Functions</i> ) |                      |
| Controlled positioning                              | 1 channel (see the Manual <i>Technological Functions</i> )                                           |                      |
| Integrated "Controlling" SFB                        | PID controller (see the Manual <i>Technological Functions</i> )                                      |                      |
| <b>Dimensions</b>                                   | <b>CPU 314C-2 PtP</b>                                                                                | <b>CPU 314C-2 DP</b> |
| Mounting dimensions W x H x D (mm)                  | 120 x 125 x 130                                                                                      |                      |
| Weight                                              | approx. 676 g                                                                                        |                      |
| <b>Voltages and currents</b>                        | <b>CPU 314C-2 PtP</b>                                                                                | <b>CPU 314C-2 DP</b> |
| Power supply (rated value)                          | 24 VDC                                                                                               |                      |
| • Permitted range                                   | 20.4 V to 28.8 V                                                                                     |                      |
| Current consumption (no-load operation)             | Typically 150 mA                                                                                     |                      |
| Inrush current                                      | Typically 11 A                                                                                       |                      |
| Power consumption (nominal value)                   | 800 mA                                                                                               | 1000 mA              |
| I <sup>2</sup> t                                    | 0.7 A <sup>2</sup> s                                                                                 |                      |
| External fusing of power supply lines (recommended) | LS switch type C min. 2 A,<br>LS switch type B min. 4 A                                              |                      |
| Power loss                                          | Typically 14 W                                                                                       |                      |

CPU 313C, CPU 313C-2 DP/PtP, CPU 314C-2 DP/PtP: DI/DO (connectors X11 and X12)

| X11 of CPU 313C-2 PtP/DP<br>X12 of CPU 314C-2 PtP/DP |                    |              |                  |      |        |        |      |             |          |       |                |
|------------------------------------------------------|--------------------|--------------|------------------|------|--------|--------|------|-------------|----------|-------|----------------|
| Standard<br>DI                                       | Interrupt<br>input | Count        | Posi-<br>tioning | 1)   |        |        |      | Positioning |          | Count | Standard<br>DO |
|                                                      |                    |              |                  | 1 0  | 1L+    | 2L+    | 0 21 | Digital     | Analog   |       |                |
| X                                                    | X                  | Z0 (A)       | A 0              | 2 0  | DI+0.0 | DO+0.0 | 0 22 |             |          | V0    | X              |
| X                                                    | X                  | Z0 (B)       | B 0              | 3 0  | DI+0.1 | DO+0.1 | 0 23 |             |          | V1    | X              |
| X                                                    | X                  | Z0 (HW gate) | N 0              | 4 0  | DI+0.2 | DO+0.2 | 0 24 |             |          | V2    | X              |
| X                                                    | X                  | Z1 (A)       | Prob 0           | 5 0  | DI+0.3 | DO+0.3 | 0 25 |             |          | V3 1) | X              |
| X                                                    | X                  | Z1 (B)       | Bero 0           | 6 0  | DI+0.4 | DO+0.4 | 0 26 |             |          |       | X              |
| X                                                    | X                  | Z1 (HW gate) |                  | 7 0  | DI+0.5 | DO+0.5 | 0 27 |             |          |       | X              |
| X                                                    | X                  | Z2 (A)       |                  | 8 0  | DI+0.6 | DO+0.6 | 0 28 |             | CONV_EN  |       | X              |
| X                                                    | X                  | Z2 (B)       |                  | 9 0  | DI+0.7 | DO+0.7 | 0 29 |             | CONV_DIR |       | X              |
|                                                      |                    |              |                  | 10 0 |        | 2M     | 0 30 |             |          |       |                |
|                                                      |                    |              |                  | 11 0 |        | 3L+    | 0 31 |             |          |       |                |
| X                                                    | X                  | Z2 (HW gate) |                  | 12 0 | DI+1.0 | DO+1.0 | 0 32 | R+          |          |       | X              |
| X                                                    | X                  | Z3 (A)       | 1)               | 13 0 | DI+1.1 | DO+1.1 | 0 33 | R-          |          |       | X              |
| X                                                    | X                  | Z3 (B)       |                  | 14 0 | DI+1.2 | DO+1.2 | 0 34 | Rapid       |          |       | X              |
| X                                                    | X                  | Z3 (HW gate) |                  | 15 0 | DI+1.3 | DO+1.3 | 0 35 | Creep       |          |       | X              |
| X                                                    | X                  | Z0 (Latch)   |                  | 16 0 | DI+1.4 | DO+1.4 | 0 36 |             |          |       | X              |
| X                                                    | X                  | Z1 (Latch)   |                  | 17 0 | DI+1.5 | DO+1.5 | 0 37 |             |          |       | X              |
| X                                                    | X                  | Z2 (Latch)   |                  | 18 0 | DI+1.6 | DO+1.6 | 0 38 |             |          |       | X              |
| X                                                    | X                  | Z3 (Latch)   | 1)               | 19 0 | DI+1.7 | DO+1.7 | 0 39 |             |          |       | X              |
|                                                      |                    |              |                  | 20 0 | 1M     | 3M     | 0 40 |             |          |       |                |

Zn Counter n  
 A, B Encoder signals  
 HW gate Gate control  
 Latch Store counter distance  
 Vn Comparator n  
 Prob 0 Measuring probe 0  
 Bero 0 Reference point switch 0  
 R+, R- Directional signal  
 Rapid Rapid traverse  
 Creep Creep speed  
 CONV\_EN Power section enable  
 CONV\_DIR Directional signal (only with control type "voltage 0 to 10 V or current from 0 to 10 mA and directional signal")  
 X Pin usable if not assigned to technology functions

1) CPU 314C-2 only

## Reference

Details are found in the Manual *Technical Functions* under *Counting, Frequency Measurement and Pulse Width Modulation*