## **FAQ about Drive Technology**

# Service & SUPPORT

Technology CPUs FAQ



Upgrading the SINAMICS S120 Firmware and Adapting the S7T Config Project Data





Entry ID: 21624542

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http://support.automation.siemens.com/WW/view/en/21624542

## Question

How is a SINAMICS S120 drive upgraded from firmware V2.1 to firmware V2.2 in an S7T Config project?

## Answer

Follow the steps listed below, which describe the upgrading in detail.

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## 1 Requirements

This description assumes that the following requirements are met:

- 1. A CompactFlash card with the SINAMICS S120 firmware V2.2x is available. If you obtained the firmware from the internet, generate a CompactFlash card with the firmware V2.2x as described e.g. in the A&D Support article 21553993.
- 2. The currently (prior to the upgrade) configuration executable on the SINAMICS device to be upgraded was read and a backup of the entire Step7 project was created.

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## 1.1 Procedure for backing up the configuration of the SINAMICS drive

 Establish an online connection to S7T Config by clicking and back up the current configuration. In the Navigator, select the respective SINAMICS drive and select the context menu command Target device > Load all to PG (all p-and r- parameters)...

Figure 1-1



2. Exit S7T Config and save the entire Step 7 project in the SIMATIC Manager.

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Note For safety reasons, we recommend creating a backup before upgrading.

#### 2 Upgrading the SINAMICS Firmware and Adapting the S7T Config Project Data

#### 2.1 Upgrading the firmware of the SINAMICS drive

- 1. Start S7T Config. Via the context menu, change the device version of SINAMICS S120 from V2.1 to V2.2 in S7T Config.
- Figure 2-1



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2. Select the new device version V2.2x and click the "Change version:" button.

| Device Version   |                 |
|--|-----------------|
| Current version<br>SINAMICS S120 V2.2x                           | Close           |
| Available versions<br>SINAMICS S120 V2.1x<br>SINAMICS S120 V2.2x | Change version: |
|  | Help            |

- 3. Save and compile the project by clicking
- 4. Switch off the 24 V DC power supply of SINAMICS
- 5. Plug the CompactFlash card in the SINAMICS control unit
- 6. Switch the 24 V DC power supply back on
- 7. In S7T Config, establish an online connection to SINAMICS by clicking ➡

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8. Open the "Configuration" dialog box by double-clicking in the Navigator and switch to the "Version overview" tab. Click the "Firmware update..." button

| 10       Instrumentary in the instrumentary in the instrumentary instrume                                     |   |  |        | 1               |                        | _            |               |         |      |
|---|---|--|--------|-----------------|------------------------|--------------|---------------|---------|------|
| Image: Section code         Image: Section c  | 317   | PHOHBUS message frame Version over       | CVIEHV |                 |                        |              |               |         |      |
| ■ 377         ■ 100         Comparent         ■ 100         End (b) wersing (b)   | 1 Insert single drive                             |  |        |                 |                        |              |               |         |      |
| Image: Second                    | 3177  | Component                                | Ho.    | W version       | Order no.              | IW version   | Seriat no.    |         | -    |
| Control       Contro       Control       Control  | - III Technologie                                 |  |        |                 | Dropert and            | Decise 1 and | Droject cat   |         |      |
| Interesting 10:100 molecular         Interestinter         Interesting 10   |   | Control Unit/Closed-lose control module) | 1      | 2203000         | 65L3040-0MA00-0AAx     | B            | T-S12029438   |         |      |
| Article, J. LettergradeTyree val:       2         Conversion  | EXTERNAL ENCODES                                  | Einspeisung 1/Infeed)                    | 2      | 2202900         | 65L0100-7TE21-6AAX     | C            | T-R32002030   |         |      |
| Artes_1 Mathematical         Artes_1 Mathematical         Constrained   | a fill STANDAUE sensor joyche                     | Antrieb_1 Leistungsteil(Power unit)      | 3      | 2202600         | 65L3120-1TE21-0AAx     | A            | T-S82001196   |         |      |
| • Description           • Description           • Description           • Description           • Topology           • Description           • Desc   | C. B. SHAMOS SISS                                 | Antrieb_1 Motor(Motor)                   | 4      |                 | 1FK6042-xAF7x-xTxx     |              |               |         |      |
| ↓         Construction   | Company   | Antrieb_1 Motor(Encoder 1)               | 6      |                 | 1FR6000-20000-3/Tex    |              |               |         |      |
| <ul> <li></li></ul>   |   | Antrieb_1 SMC10_zu_Motor(SMx 1)          | 5      | 2202800         | 6SL3055-0AA00-5AAx     | A            | T-S12045599   |         |      |
| Comparison         Addmin_2 Materylikesy         III         IIII         PRODUCT_MET_ALX         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII  | Topplan   | Antrieb_2Leistungsteil(Power unit)       | 7      | 2202000         | 65L3120-1TE21-0AAx     | A            | T-562001204   |         |      |
| → Contraction           → Contraction           → Contraction           → Contraction           → Source lags   | in the Control Unit                               | Antrieb_2 Motor(Motor)                   | 8      | 11 (A. 16)      | 1FK8042-xAF7x-xAxx     |              |               |         |      |
| Constraints     Constrai  | > Configuration                                   | Antrieb_2 Motor(Encoder 1)               | 10     |                 | 1FK6x00-10000X-XAXX    |              |               |         |      |
|   | Control lock                                      | Antrieb_2 SMC20_zu_Motor(SMx1)           | 9      | 2202800         | GSL3055-0AA00-5BAx     | A            | T-S\$2031055  |         |      |
| Article 3 Departure         Article 3 Motor/Motor)         12   | S- Innetsinetrats                                 | Antrieb_3Leistungstei(Power unit)        | 11     | 2202800         | 6SL3120-1TE21-0AAx     | A            | T-S62001199   |         |      |
| Artenis 3         Materia 3 <t< td=""><td>T &gt;&gt; Communication</td><td>Antrieb_3 Motor(Motor)</td><td>12</td><td></td><td>1FH6042-xAF7x-xExx</td><td></td><td></td><td></td><td></td></t<>  | T >> Communication                                | Antrieb_3 Motor(Motor)                   | 12     |                 | 1FH6042-xAF7x-xExx     |              |               |         |      |
| # B       Processor       Arteris, 3 SHC20, z., MacrOM, 11 (1)       2020000 (81, 3056, AAAA, 564, A       7.50201000         # B       Processor       Arteris, 3 SHC20, z., MacrOM, 11 (1)       2020000 (81, 3056, AAAA, 564, A       7.50201000         # Drows       Arteris, 3 SHC20, z., MacrOM, 11 (1)       2020000 (81, 3056, AAAA, 564, A       7.50201000         # Drows       Arteris, 4 SHC20, z., MacrOM, 11 (1)       2020000 (81, 3056, AAAA, 564, A       7.50201000         # Arteris, 3 Arteris, 4 SHC20, z., MacrOM, 11 (1)       2020000 (81, 3056, AAAA, 564, A       7.50201000         # Arteris, 3 Arteris, 2 MacrOM, 11 (1)       2020000 (81, 3056, AAAA, 564, A       7.50201000         # Arteris, 3 MacrOM, 11 (1)       2020000 (81, 3056, AAAA, 564, A       7.50201000         # Arteris, 3 MacrOM, 11 (1)       2020000 (81, 3056, AAAA, 564, A       7.50201000         # Arteris, 3 MacrOM, Morrens AN       1       2020000 (81, 3056, AAAA, 564, A       7.50201000         # Arteris, 5 MacrOM, 11 (1)       2020000 (81, 3056, AAAA, 564, A       7.50201000       Arteris, 5 MacrOM, 11 (1)         # Arteris, 5 MacrOM, 11 (1)       2020000 (81, 2150, 1121, AAAx, A       7.50201007         Arteris, 5 MacrOM, 11 (1)       2020000 (81, 3056, AAAA, 564, A       7.50201007         # Arteris, 5 MacrOM, 11 (1)       2020000 (81, 3056, AAAAA, 564, A       7.50201007   | a Discounter                                      | Antrieb_3 Motor(Encoder 1)               | 14     |                 | 1FREAK                 |              |               |         |      |
| Topological composed     Topological consolved     Topological c  | Financia na 1                                     | Antrieb_3.5MC20_zu_Motor(5Mx 1)          | 13     | 2202800         | 65L3055-0AA00-5BAx     | A            | T-S52031060   |         |      |
| Primes               Arteris               Arteris <td< td=""><td><ul> <li>Toget for the tract component</li> </ul></td><td>Antrieb_4 Leistungsteil(Power unit)</td><td>15</td><td>2202800</td><td>6SL3120-1TE21-0AAx</td><td>A</td><td>T-S62001197</td><td></td><td></td></td<>  | <ul> <li>Toget for the tract component</li> </ul> | Antrieb_4 Leistungsteil(Power unit)      | 15     | 2202800         | 6SL3120-1TE21-0AAx     | A            | T-S62001197   |         |      |
| Domert dive     Domert d  | - Cal Datives                                     | Arthrieb_4 Motor(Motor)                  | 16     | ++              | 1FK8042-xAF7x-xAxx     |              |               |         |      |
| →         Arteles, 3         Arteles, 5   | * I Insert drive                                  | Antrieb_4 Motor(Encoder 1)               | 18     |                 | 1FR65x00x-30000x-3:Axx |              |               |         |      |
| Active 51, 14(Technologie)     Active 51, 14(Technologie  | - R Actrieb 1                                     | Antrieb_4.SMC20_zu_Motor(SMx1)           | 17     | 2202000         | 6SL3055-0AA00-5BAx     | ٨            | 1-SS2031045   |         |      |
| <ul></ul>   | R Active SI 1 (2/Technologie)                     | Antrieb_5 Leistungsteil(Power unit)      | 10     | 2202800         | 6SL3120-1TE21-0AAx     | A            | T-S82001195   |         |      |
| Configuration     Config  | Trive pavipator                                   | Antrieb_S.Motor(Motor)                   | 20     | ***             | 1FH6042-xAF7x-xAxx     |              |               |         |      |
| → Controllogic         Artends, 550C20, zu, Mater(5M:1)         21         2020000         (65), 3556-344, 346, 44         T-552001067           + ≫ Control         > Functions         Artends, 550C20, zu, Mater(5M:1)         21         2020000         (65), 3556-344, 346, 44         T-552001067           + ≫ Functions         > Functions  | Sconfiguration                                    | Antrieb_5 Motor(Encoder 1)               | 22     | <del>11</del> 2 | 1FMB000-30000-3A0X     |              |               |         |      |
|   | > Control logic                                   | Antrieb_5.SMC20_zu_Motor(SMx 1)          | 21     | 2202800         | 65L3055-0AA00-5BAx     | A            | T-S52031067   |         |      |
|   | * >> Open-loop/closed-loop control                | Antrieb_6 Leistungsteil(Power unit)      | 23     | 2202800         | 6SL3120-1TE21-0AAX     | A            | T+S62004876   |         |      |
|   | * >> Functions                                    | Antrieb_6 Motor(Motor)                   | 24     |                 | 1FR6042-xAF7x-xExx     |              |               |         |      |
| * >> Commissions     * >> Commissions     * >> Desprets     * | Messages and monitoring                           | Antrieb_6 Motor(Encoder 1)               | 26     |                 | 1FK6x00r-x00000r-xEx0r |              |               |         |      |
| * * S Comparation     | + > Commissioning                                 | Antrieb_0.SMC20_zu_Motor(SMx 1)          | 25     | 2202000         | 6SL3055-0AA00-SBAx     | A            | 1-\$\$2031057 |         |      |
| * >> Gayronica     + @ Arkenb_2     * @ Arkenb_3     * @ Arkenb_3     * @ Arkenb_3     * @ Arkenb_5     * @ Arkenb_5     * @ Arkenb_5   | 🗵 🎾 Communication                                 |  |        |                 |                        |              |               |         |      |
| + 60 Annes_1<br>+ 60 Annes_1<br>+ 60 Annes_5<br>+ 60 Annes_5<br>- Montron   | * » Diagnosocs                                    |  |        |                 |                        |              |               |         |      |
|   | + M Antreb_2                                      |  |        |                 |                        |              |               |         |      |
| * db Arone, 5<br># de Arone, 5<br>Montron   | A Antoine A                                       |  |        |                 |                        |              |               |         |      |
| in Bal Antonio 5  | * M ACCINC. *                                     |  |        |                 |                        |              |               |         |      |
| MARTOR  | M Antriko_5                                       | ·  |        |                 |                        |              |               |         |      |
| Promitices .  | a Managara  |  |        |                 |                        |              |               |         |      |
|   | MONITOR   |  |        |                 |                        |              |               |         |      |
|   |   |  |        |                 |                        |              |               |         |      |
|   |   |  |        |                 |                        |              |               |         |      |
| Firmware update   |   |  |        |                 |                        |              | Filmware up   | James I |      |
|   |   |  |        |                 |                        |              |               |         |      |
| One   |   |  |        |                 |                        |              |               | Close   | Н. н |
|   |   |  |        |                 |                        |              |               | 1.000   | J    |
| 000/ ML_SINAMICS \$120  | 10 VQF  | SINAMICS \$120                           |        |                 |                        |              |               |         |      |
|   |   |  |        |                 |                        |              |               |         |      |
|   |   |  |        |                 |                        |              |               |         |      |

A dialog box for updating the firmware of the connected components opens.

- 9. Select all components and apply the Firmware update.
- 10. In S7T Config, terminate the online connection to SINAMICS by clicking Section 10. In S7T Config, terminate the online connection to SINAMICS by clicking section 10. In S7T Config, terminate the online connection to SINAMICS by clicking section 10. In S7T Config, terminate the online connection to SINAMICS by clicking section 10. In S7T Config, terminate the online connection to SINAMICS by clicking section 10. In S7T Config, terminate the online connection to SINAMICS by clicking section 10. In S7T Config, terminate the online connection to SINAMICS by clicking section 10. In S7T Config, terminate the online connection to SINAMICS by clicking section 10. In S7T Config, terminate the online connection to SINAMICS by clicking section 10. In S7T Config, terminate the online connection to SINAMICS by clicking section 10. In S7T Config, terminate the online connection to SINAMICS by clicking section 10. In S7T Config, terminate the online connection to SINAMICS by clicking section 10. In S7T Config, terminate the online connection to SINAMICS by clicking section 10. In S7T Config, terminate the online connection to SINAMICS by clicking section 10. In S7T Config, terminate the online connection to SINAMICS by clicking section 10. In S7T Config, terminate the online connection 10. In S7T Config, terminate the onl
- 11. Switch off the 24V DC supply voltage of SINAMICS
- 12. Switch the 24V DC supply voltage of SINAMICS back on
- 13. Reestablish an online connection to SINAMICS by clicking

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14. By means of S7T Config, load the project to SINAMICS by clicking Subsequently, select the context menu command Target device > Copy RAM to ROM.



The upgrading of the firmware in SINAMICS is completed. The status of SINAMICS is displayed in the alarm window. If no errors are displayed, the drive is now ready for operation.

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#### 2.2 Parameter adaptations to SINAMICS S120 V2.2x

Due to new functionalities in the SINAMICS S120 firmware V2.2, errors or warnings on the individual drive components may possibly be displayed. If this is the case, it is required to adapt individual parameters.

**Note** The parameters have to be adapted for each SINAMICS drive in the project.

#### 2.2.1 Parameter adaptations for the PROFIBUS message frame

You have to adapt the used message type. Two options are available:

• In the expert list by selecting the message in the *p922* parameter:

| arameter | D | + | + Parameter text                                    | Value Antrieb_1                          | Unit | Changeable to    | Access | Minir |
|----------|---|---|---|--|------|------------------|--------|-------|
| 99       |   |   | + CO/BO: Status word sequential control             | 3A37H                                    | -    |                  | 2      |       |
| 122      |   |   | PROFIBUS PZD telegram selection                     | SIEMENS telegram 105 (105)               | -    | Ready to run     | 1      |       |
| 25       |   |   | PROFIBUS clock synchronous sign-of-life tolerance   | Standard telegram 2 (2)                  |      | Operation        | 3      | 0     |
| 30       |   |   | PROFIBUS operating mode                             | Standard telegram 3 (3)                  |      |                  | 3      |       |
| 44       |   |   | Counter for fault buffer changes                    | Standard telegram 4 (4)                  |      |                  | 2      |       |
| 45[0]    |   | + | Fault code  | Standard telegram 5 (5)                  |      |                  | 2      |       |
| 47[0]    |   | + | Fault number  | Standard telegram 6 (6)                  |      |                  | 3      |       |
| 48[0]    |   | + | Fault time received in milliseconds                 | SIEMENS telegram 102 (102)               |      |                  | 3      |       |
| 49[0]    |   | + | Fault value   | SIEMEINS telegram 103 (103)              |      |                  | 3      |       |
| 952      |   |   | Fault cases, counter                                | SIEMENS telegram 106 (106)               |      | Operation        | 3      | 0     |
| 70       |   |   | Reset drive parameters                              | Free telegram configuration with BICO (9 | 9991 | Commissioning (F | 2      |       |
| 71       |   |   | Save drive object parameters                        | not active (0)                           | -    | Operation        | 1      |       |
| 75101    |   | + | Drive object identification, Company (Siemens = 42) | 42                                       | -    |                  | 2      |       |
| 79[0]    |   | + | Encoder format PROFIdrive, Header                   | 20753                                    | -    |                  | 3      |       |
| 000001   | С | - | Macro connector inputs (CI) for speed setpoints     | 0  |      | Ready to run     | 1      | 0     |
| 055[0]   | c |   | Bit Jog bit 0                                       | 0  |      | Ready to run     | 3      | -     |
| 056(0)   | c |   | Bi Jog bit 1  | 0  |      | Ready to run     | 3      |       |
| 082[0]   | D |   | Maximum sneed                                       | 8500.000                                 | rnm  | Ready to run     | 1      | 0     |
| 083(0)   | D |   | CO: Sneed limit in positive direction of rotation   | 210000.000                               | rom  | Operation        | 2      | 0     |
| 000[0]   | 0 |   | Sneed limit nositive effective                      | 8300.000                                 | rom  | operation        | 3      | 0     |
| 03601    | D |   | CO: Speed limit persitive direction of rotation     | 210000.000                               | rpm  | Oneration        | 2      | 210   |
| 000[0]   | 0 |   | Co. Speed limit negative direction of rotation      | -210000.000                              | rpm  | Operation        | 2      | -210  |
| 4.04701  | D |   | Speed limit negative enective                       | -0300.000                                | rpm  | Oneration        | 1      | 0     |
| 121[0]   | 0 |   | Ramp-runction generator ramp-down time              | 10.000                                   | 8    | Operation        | 1      | 0     |
| 135[0]   | 0 | - | Orrs ramp-down time                                 | 0.000                                    | 8    | Operation        | 2      | U     |
| 140[0]   |   |   | Bit Enables the ramp-function generator             | Antrieb_1:r2090.4                        | -    | Ready to run     | 3      |       |
| 141[0]   |   |   | Bi: Start ramp-function generator                   | Antrieb_1 : r2090.5                      | -    | Ready to run     | 3      |       |
| 142[0]   | C |   | BI: Enable speed setpoint                           | Antrieb_1 : r2090.6                      | -    | Ready to run     | 3      |       |
| 155[0]   | С |   | CI: Speed controller speed setpoint 1               | 0  | -    | Ready to run     | 3      |       |
| 160[0]   | С |   | CI: Speed controller speed setpoint 2               | 0  | -    | Ready to run     | 3      |       |
| 169      |   |   | CO: Speed controller, speed setpoints 1 and 2       | 0.000                                    | rpm  |                  | 3      |       |
| 170      |   |   | CO: Speed controller, setpoint sum                  | 0.000                                    | rpm  |                  | 3      |       |
| 189[0]   | D | _ | + Speed setpoint configuration                      | 3H                                       | -    | Operation        | 2      | OH    |
| 190      |   |   | CI: DSC position deviation XERR                     | Antrieb_1 : r2060[6]                     | -    | Ready to run     | 3      |       |
| 191      |   |   | CI: DSC position controller gain KPC                | Antrieb_1 : r2060[8]                     | -    | Ready to run     | 3      |       |
| 192[0]   | D |   | DSC enc selection                                   | Encoder 1 (motor encoder) (1)            | -    | Operation        | 3      |       |
| 193[0]   | D |   | DSC encoder adaptation factor                       | 1.000                                    | -    | Operation        | 3      | 0     |
| 1215     |   |   | Motor holding brake configuration                   | No motor holding brake being used (0 💌   | -    | Operation        | 2      |       |
| 216      |   |   | Motor holding brake, opening time                   | 100                                      | ms   | Operation        | 2      | 0     |
| 217      |   |   | Motor holding brake closing time                    | 100                                      | ms   | Operation        | 2      | 0     |
| 226      |   |   | Threshold for zero speed detection                  | 20.0                                     | rpm  | Operation        | 2      | 0     |
| 227      |   |   | Zero speed detection monitoring time                | 4.000                                    | s    | Operation        | 2      | 0     |
| 1228     |   |   | Pulse cancellation delay time                       | 0.000                                    | s    | Operation        | 2      | 0     |
| 240      |   |   | Vdc controller or Vdc monitoring configuration      | Inhib Vdc ctrl (0)                       | -    | Operation        | 3      |       |
| 244      |   |   | DC link voltage threshold, upper                    | 750                                      | V    | Operation        | 3      | 400   |
| 248      |   |   | DC link voltage threshold, lower                    | 450                                      | V    | Operation        | 3      | 100   |
| 260      |   |   | Vdc controller proportional gain                    | 1.00                                     | AN   | Operation        | 3      | 0     |

•

Upgrading the SINAMICS Firmware Entry ID: 21624542

in the Configuration dialog box of SINAMICS under PROFIBUS message frame

#### Figure 2-6

| 317     10 proset sincle drive  | PROFIBUS message frame Version overview                                    | - DROTINI IS                  |   |
|---|--|-------------------------------|---|
| <ul> <li>3171</li> <li>3171</li> </ul>  | Otherst Drive objects are repped with data in the following requirice non- | Laddress 0 address Avis       |   |
| Incorroope     ASPS   | Environment 1 2 Eventrelevant configuration with BOO                       | 363 363 363 363               |   |
| EXTERNAL ENCODERS   | 2 Antriah 1 3 SEMENS televene 105  | 256 275 256 275 Arbse 51 1 C4 |   |
| E CANS  | 3 Antrinh 2 4 SIEMENIS televises 105                                       | 276 295 276 295 Artes 51 2    | - |
| # ff., SIMCCODVE sensor isoche  | 4 Antriah 3 5 SEMEXIS telegram 105   | 296 316 296 316 Artes 51 3    | = |
| SHILL SINAMICS 5120   | 5 Antrieb 4 6 SEMENS telegram 105  | 414 433 414 433 Achte SI 4    |   |
| ) Overview  | 6 Antrieb 5 7 SEMENS Mexican 105   | 434 451 434 451 Arbse SLS     |   |
| > Configuration   | 7 Antrieb 8 8 SEMINE telegram 105  | 454.473 454.473               |   |
| > Topology  | 8 Control Unit 1 Free message frame configuration with B                   | CO 316.379 338.379            |   |
| <ul> <li>Direct Orive</li> <li>Artrick, j</li> <li>Montrol</li> </ul> |  |                               |   |

click the "Align with HW Config" button.

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#### 2.2.2 Parameter adaptations for absolute value encoders

#### **Encoder identification**

The firmware V2.2x now supports an encoder identification for absolute value encoders. If you use an absolute value encoder, you have to perform an encoder identification. Error ID F07414 displayed in the alarm window indicates that it is required to perform an encoder identification.

1. Select the drive to be upgraded and select Expert > Expert list in the context menu



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2. Change the access level Select access level Service (4).

Figure 2-8

| Set Access Leve                             | l                                  |              |
|---|------------------------------------|--------------|
| Service (4)<br>Standard (1)<br>Extended (2) |                                    | <b>_</b>     |
| Service (4)                                 | Password for service access level: | *****        |
| <u></u> K                                   | <u>C</u> ancel                     | <u>H</u> elp |

Ask Technical Support for the password required for access level "Service (4)".

Technical Support for all A&D products can be contacted

• via the web form for Support Request

http://www.siemens.de/automation/support-request

- Phone: + 49 180 5050 222
- Fax: + 49 180 5050 223

Further information on our Technical Support is available on the internet at

http://www.siemens.com/automation/service

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3. In the drop-down list of the *p10* parameter, select "Encoder commissioning (4)" in the expert list.

| Parameter  | D | + | + | Parameter text   | Value Antrieb_1                         | Unit      | Changeable to    | Access | Minimum | IV |
|------------|---|---|---|--|---|-----------|------------------|--------|---------|----|
| r2         |   | _ | _ | Drive operating display                                | [00] Operation - everything enabled (0) | -         |                  | 1      |         |    |
| p10        |   |   |   | Drive, commissioning parameter filter                  | Ready (0)                               | -         | Ready to run     | 1      |         |    |
| p15        |   |   |   | Macro drive object                                     | Ready (0)                               | 1-        | Commissioning (F | 1      | 0       | 9: |
| r20        |   |   |   | Speed setpoint, smoothed                               | Quick commissioning (1)                 | rpm       |                  | 2      |         |    |
| r21        |   |   |   | Actual speed, smoothed                                 | Power module commissioning (2)          | rpm       |                  | 2      |         |    |
| r24        |   |   |   | Drive output frequency smoothed                        | Motor commissioning (3)                 | Hz        |                  | 3      |         |    |
| r25        |   |   |   | Drive, output voltage smoothed                         | Encoder commissioning (4)               | V         |                  | 2      |         |    |
| r26        |   |   |   | DC link voltage, smoothed                              | Detailed application/units (5)          | V         |                  | 2      |         |    |
| r27        |   |   |   | Absolute actual current, smoothed                      | Dowpload (29)                           | A.        |                  | 2      |         |    |
| r28        |   |   |   | Modulation depth, smoothed                             | Parameter reset (30)                    | %         |                  | 3      |         |    |
| r29        |   |   |   | Drive, smoothed field-generating current actual value  | Safety Integrated commissioning (95)    | A         |                  | 3      |         |    |
| r30        |   |   |   | Current actual value, torque-generating, smoothed      | 0.0                                     | A         |                  | 3      |         |    |
| r31        |   |   |   | Actual torque smoothed                                 | 0.01                                    | Nm        |                  | 2      |         |    |
| r32        | - |   |   | Power factor, smoothed                                 | 0.00                                    | KVV       |                  | 2      |         |    |
| r33        |   |   |   | Torque utilization, smoothed                           | 0.1                                     | %         |                  | 3      |         |    |
| r35        |   |   |   | CO: Motor temperature                                  | 27.5                                    | °C        |                  | 2      |         |    |
| r36        | - |   |   | Power module overload I2t                              | 0.0                                     | %         |                  | 3      |         |    |
| r37101     |   | + |   | Power module temperatures, Maximum inverter            | 45                                      | °C        |                  | 3      |         |    |
| p45        |   |   |   | Smoothing time constant, display values                | 1.00                                    | ms        | Operation        | 2      | 0       | 5  |
| r46        |   |   | + | CO/BO: Missing drive enable signals                    | OH                                      | -         |                  | 1      |         |    |
| r50        | - |   | + | CO/BO: Command data set CDS effective                  | OH                                      | -         |                  | 2      |         |    |
| r51        | - |   | + | CO/BO: Drive data set DDS effective                    | OH                                      | -         |                  | 2      |         |    |
| r56        | - |   | + | CO/BO: Closed-loop control status word 1               | 10H                                     | -         |                  | 3      |         |    |
| r60        | - |   |   | CO: Speed setpoint before the setpoint filter          | 0.00                                    | rpm       |                  | 3      |         |    |
| r61        | - |   |   | CO: Speed actual value motor encoder                   | 0.00                                    | rpm       |                  | 2      |         |    |
| r62        | - |   |   | CO: Speed setpoint after the filter                    | -0.03                                   | rom       |                  | 3      |         |    |
| r63        | - |   |   | CO: Actual speed, smoothed                             | -14.65                                  | rom       |                  | 3      |         |    |
| r64        | - |   |   | CO: Speed controller system deviation                  | -0.03                                   | rom       |                  | 3      |         |    |
| r65        | - |   |   | Slip frequency   | 0.00                                    | H7        |                  | 3      |         |    |
| r66        |   |   |   | CO: Drive output frequency                             | 0.4                                     | Hz        |                  | 3      |         |    |
| r67        |   |   |   | Maximum drive output current                           | 9.50                                    | A         |                  | 3      |         |    |
| r68        | - |   |   | CO: Absolute current actual value                      | 0.0                                     | A         |                  | 3      |         |    |
| r69[0]     | - |   |   | Phase current actual value Phase II                    | -0.00                                   | Δ.        |                  | 3      |         |    |
| r70        | - |   |   | CO: Actual DC link voltage                             | 596.40                                  | v         |                  | 3      |         |    |
| r72        |   |   |   | CO: Drive, output voltage                              | 11                                      | V         |                  | 3      |         |    |
| r74        |   |   |   | CO: Modulat depth                                      | 0.87                                    | %         |                  | 3      |         |    |
| r75        |   |   |   | Current setonint_field-generating                      | 0.00                                    | A         |                  | 3      |         |    |
| r76        |   |   |   | Current actual value, field-generating                 | 0.00                                    | A         |                  | 3      |         |    |
| r77        |   |   |   | CO: Current setpoint torque-generating                 | -0.03                                   | A         |                  | 3      |         |    |
| r78[0]     |   | + |   | CO: Current actual value torque-generating. Unsmoothed | 0.00                                    | A         |                  | 3      |         |    |
| r79[0]     |   | - |   | CO: Torque setnoint total. Unsmoothed                  | 0.16                                    | Nim       |                  | 3      |         |    |
| r80        |   | - |   | CO: Torque actual value                                | 0.00                                    | Nim       |                  | 3      |         |    |
| v91        |   |   |   | CO: Torque utilization                                 | 0.00                                    | 96        |                  | 3      |         |    |
| 29201      |   |   |   | CO: Actual active noway. Unemodified                   | 0.00                                    | 10        |                  | 3      |         |    |
| roz[U]<br> |   | + |   | CO. Actual active power, unismoothed                   | -0.00                                   | RVV<br>Or |                  | 3      |         |    |
| 100        |   |   |   | CO. Flux Setpoint                                      | 100.0                                   | 76        |                  | 3      |         |    |
| r84<br>く   |   |   |   | ICO: Actual flux                                       | 100.0                                   | %         |                  | 3      |         |    |

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4. In the drop-down list of the *p440* parameter, select "Transfer serial number (1)" in the expert list.

Figure 2-10

| Parameter | D | + | + | Parameter text   | Value Antrieb_1                           |    | Unit       | Changeable to    | Access | Minimum | IV |
|-----------|---|---|---|--|---|----|------------|------------------|--------|---------|----|
| 431[0]    | Е | _ |   | Commutation angle offset                                 | 0.00                                      |    | 0          | Commissioning (P | 3      | -180    | 1: |
| 440[0]    | Е |   |   | Copy encoder serial number                               | No action (0)                             | -  | -          | Commissioning (P | 4      |         |    |
| 441[0]    | Е |   |   | Encoder commissioning serial number part 1               | No action (0)                             | ٦  | -          | Commissioning (P | 4      | OH      | FI |
| 442[0]    | Е |   |   | Encoder commissioning serial number part 2               | Transfer serial number (1)                |    | -          | Commissioning (P | 4      | OH      | FI |
| 443[0]    | Е |   |   | Encoder commissioning serial number part 3               | OH  |    | -          | Commissioning (P | 4      | OH      | FI |
| p444[0]   | Е |   |   | Encoder commissioning serial number part 4               | OH  |    | -          | Commissioning (P | 4      | OH      | FI |
| 0445[0]   | Е |   |   | Encoder commissioning serial number part 5               | OH  |    | -          | Commissioning (P | 4      | OH      | FI |
| 451[0]    |   | + |   | Commutation angle factor, Encoder 1                      | 3   |    | -          |                  | 3      |         |    |
| 455[0]    |   | + | + | Encoder configuration recognized, Encoder 1              | OH  |    | -          |                  | 3      |         |    |
| r456[0]   |   | + | + | Encoder configuration supported, Encoder 1               | 800010H                                   |    | -          |                  | 3      |         |    |
| 458[0]    |   | + | + | Sensor module properties, Encoder 1                      | E0030004H                                 |    | -          |                  | 3      |         |    |
| 460[0]    |   | + |   | Encoder serial number part 1, Encoder 1                  | OH  |    | -          |                  | 3      |         |    |
| r461[0]   |   | + |   | Encoder serial number part 2, Encoder 1                  | OH  |    | -          |                  | 3      |         |    |
| r462[0]   |   | + |   | Encoder serial number part 3, Encoder 1                  | OH  |    | -          |                  | 3      |         |    |
| 463[0]    |   | + |   | Encoder serial number part 4, Encoder 1                  | OH  |    | -          |                  | 3      |         |    |
| 464[0]    |   | + |   | Encoder serial number part 5, Encoder 1                  | OH  |    | -          |                  | 3      |         |    |
| 479[0]    |   | + |   | CO: Diagnostics encoder position actual value Gn_XIST1,  | 3986199                                   |    | -          |                  | 4      |         |    |
| 0480[0]   |   | + |   | CI: Signal source for encoder control word Gn_STW, Enc   | Antrieb_1 : r2050[5]                      |    | -          | Operation        | 3      |         |    |
| 481[0]    |   | + | + | CO: Encoder status word Gn_ZSW, Encoder 1                | OH  |    | -          |                  | 3      |         |    |
| 482[0]    |   | + |   | CO: Encoder actual position value Gn_XACT1, Encoder 1    | 3986200                                   |    | -          |                  | 3      |         |    |
| 483[0]    |   | + |   | CO: Encoder actual position value Gn_XACT2, Encoder 1    | 0   |    | -          |                  | 3      |         |    |
| r487[0]   |   | + | + | Diagnostic encoder control word Gn_STVV, Encoder 1       | OH  |    | -          |                  | 3      |         |    |
| p488[0]   |   | + |   | Measuring probe 1 input terminal, Encoder 1              | No probe (0)                              | •  | -          | Operation        | 3      |         |    |
| p489[0]   |   | + |   | Measuring probe 2 input terminal, Encoder 1              | No probe (0)                              | •  | -          | Operation        | 3      |         |    |
| p491      |   |   |   | Motor encoder fault response: ENCODER                    | Encoder fault results in OFF2 (0)         | •  | -          | Ready to run     | 3      |         |    |
| 0492      |   |   |   | Maximum speed difference for each sampling cycle for sq  | 0.0                                       |    | rpm        | Operation        | 3      | 0       | 2  |
| p495[0]   |   | + |   | Equivalent zero mark, input terminal, Encoder 1          | No equivalent zero mark (evaluation o     | •  | -          | Operation        | 3      |         |    |
| o496[0]   |   | + |   | Encoder diagnostic signal selection, Encoder 1           | not active (0)                            | •  | -          | Operation        | 4      |         |    |
| 497[0]    |   | + |   | Encoder diagnostic signal double word, Encoder 1         | 0   |    | -          |                  | 4      |         |    |
| r498[0]   |   | + |   | Encoder diagnostic signal word low, Encoder 1            | 0   |    | -          |                  | 4      |         |    |
| 499[0]    |   | + |   | Encoder diagnostic signal word high, Encoder 1           | 0   |    | -          |                  | 4      |         |    |
| p500      |   |   |   | Technology application                                   | Feed drive (limit current limitation) (10 | •  | -          | Ready to run     | 2      |         |    |
| 0528      |   |   |   | Units system for controller gains                        | Physical representation (0)               | 3  | -          | Commissioning (P | 4      |         |    |
| o578[0]   | D |   |   | Calculate parameters that are dependent on the technolog | No calculation (0)                        | •  | -          | Ready to run     | 2      |         |    |
| o580      |   |   |   | Measuring probe, input terminal                          | No probe (0)                              | •  | -          | Operation        | 3      |         |    |
| o581      |   |   |   | Meas probe, edge   | 0   |    | -          | Operation        | 3      | 0       | 1  |
| p582      |   |   |   | Measuring probe, pulses per revolution                   | 1   |    | -          | Operation        | 3      | 1       | 8  |
| p583      |   |   |   | Measuring probe, maximum measuring time                  | 10  |    | s          | Operation        | 3      | 0       | 1  |
| r586      |   |   |   | CO: Measuring probe, speed actual value                  | 0.00                                      |    | rpm        |                  | 3      |         |    |
| ·587      |   |   |   | CO: Measuring probe, measuring time measured             | 0   |    | -          |                  | 3      |         |    |
| 588       |   |   |   | CO: Measuring probe, pulse counter                       | 0   |    | -          |                  | 3      |         |    |
| r589      |   |   |   | Measuring probe, delay time                              | 0   |    | -          |                  | 3      |         |    |
| o600[0]   | М |   |   | Motor temperature sensor for monitoring                  | Temperature sensor via encoder 1 (1       | -  | -          | Operation        | 2      |         |    |
| p601[0]   | М |   |   | Motor temperature sensor type                            | KTY84 (2)                                 | -  | -          | Operation        | 2      |         |    |
| p603      |   |   |   | CI: Motor temperature                                    | 0   | Ī  | -          | Ready to run     | 2      |         |    |
| 604(0)    | М |   |   | Motor overtemperature alarm threshold                    | 120.0                                     | -1 | ۰ <u>۲</u> | Operation        | 2      | n       | 2  |

The serial numbers are written into *p441* to *p445*. After execution, *p440* is automatically reset to value (0).

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5. In the drop-down list of the p10 parameter, select "Ready (0)" in the expert list

| Parameter     | D + | +   | Parameter text  | Value Antrieb_1                         | Unit     | Changeable to    | Access | Minimum | N  |
|---------------|-----|-----|---|---|----------|------------------|--------|---------|----|
| r2            |     | -   | Drive operating display                                 | [00] Operation - everything enabled (0) | -        |                  | 1      |         |    |
| p10           |     |     | Drive, commissioning parameter filter                   | Ready (0) 🔻                             | -        | Ready to run     | 1      |         |    |
| p15           |     |     | Macro drive object                                      | Ready (0)                               | -        | Commissioning (F | 1      | 0       | 9: |
| r20           |     |     | Speed setpoint, smoothed                                | Quick commissioning (1)                 | rpm      |                  | 2      |         |    |
| r21           |     |     | Actual speed, smoothed                                  | Power module commissioning (2)          | rpm      |                  | 2      |         |    |
| r24           |     |     | Drive output frequency smoothed                         | Motor commissioning (3)                 | Hz       |                  | 3      |         |    |
| r25           |     |     | Drive, output voltage smoothed                          | Encoder commissioning (4)               | V        |                  | 2      |         |    |
| r26           |     |     | DC link voltage, smoothed                               | Dete acts (15)                          | V        |                  | 2      |         |    |
| r27           |     |     | Absolute actual current, smoothed                       | Download (29)                           | A        |                  | 2      |         |    |
| r28           |     |     | Modulation depth, smoothed                              | Parameter reset (30)                    | %        |                  | 3      |         |    |
| r29           |     |     | Drive, smoothed field-generating current actual value   | Safety Integrated commissioning (95)    | A        |                  | 3      |         |    |
| r30           |     |     | Current actual value, torque-generating, smoothed       | 0.0                                     | A        |                  | 3      |         |    |
| r31           |     |     | Actual torque smoothed                                  | 0.01                                    | Nm       |                  | 2      |         |    |
| r32           |     |     | Power factor, smoothed                                  | 0.00                                    | KVV      |                  | 2      |         |    |
| r33           |     |     | Torque utilization, smoothed                            | 0.1                                     | %        |                  | 3      |         |    |
| r35           |     |     | CO: Motor temperature                                   | 27.5                                    | °C       |                  | 2      |         |    |
| r36           |     |     | Power module overload I2t                               | 0.0                                     | %        |                  | 3      |         |    |
| r37[0]        | +   |     | Power module temperatures, Maximum inverter             | 45                                      | °C       |                  | 3      |         |    |
| p45           |     |     | Smoothing time constant, display values                 | 1.00                                    | ms       | Operation        | 2      | 0       | 5  |
| r46           |     | +   | CO/BO: Missing drive enable signals                     | OH                                      | -        |                  | 1      |         |    |
| r50           |     | +   | CO/BO: Command data set CDS effective                   | OH                                      | -        |                  | 2      |         |    |
| r51           |     | +   | CO/BO: Drive data set DDS effective                     | OH                                      | -        |                  | 2      |         |    |
| r56           |     | +   | CO/BO: Closed-loop control status word 1                | 10H                                     | -        |                  | 3      |         |    |
| r60           |     |     | CO: Speed setpoint before the setpoint filter           | 0.00                                    | rpm      |                  | 3      |         |    |
| r61           |     |     | CO: Speed actual value motor encoder                    | 0.00                                    | rpm      |                  | 2      |         |    |
| r62           |     |     | CO: Speed setpoint after the filter                     | -0.03                                   | rpm      |                  | 3      |         |    |
| r63           |     |     | CO: Actual speed, smoothed                              | -14.65                                  | rpm      |                  | 3      |         |    |
| r64           |     |     | CO: Speed controller system deviation                   | -0.03                                   | rpm      |                  | 3      |         |    |
| r65           |     |     | Slip frequency  | 0.00                                    | Hz       |                  | 3      |         |    |
| r66           |     |     | CO: Drive output frequency                              | 0.4                                     | Hz       |                  | 3      |         |    |
| r67           |     |     | Maximum drive output current                            | 9.50                                    | A        |                  | 3      |         |    |
| r68           |     |     | CO: Absolute current actual value                       | 0.0                                     | A        |                  | 3      |         |    |
| r69[0]        | +   | i - | Phase current, actual value, Phase U                    | -0.00                                   | A        |                  | 3      |         |    |
| r70           | -   | 1   | CO: Actual DC link voltage                              | 596.40                                  | V        |                  | 3      |         |    |
| r72           |     |     | CO: Drive, output voltage                               | 1.1                                     | v        |                  | 3      |         |    |
| r74           |     |     | CO: Modulat depth                                       | 0.87                                    | %        |                  | 3      |         |    |
| r75           |     |     | Current setpoint, field-generating                      | 0.00                                    | A        |                  | 3      |         |    |
| r76           |     |     | Current actual value, field-generating                  | 0.00                                    | A        |                  | 3      |         |    |
| r77           |     |     | CO: Current setpoint, torque-generating                 | -0.03                                   | A        |                  | 3      |         |    |
| r78101        |     |     | CO: Current actual value, torque-generating Limsmoothed | 0.00                                    | A        |                  | 3      |         |    |
| r79[0]        | -   |     | CO: Torque setpoint total. Umsmoothed                   | 0.16                                    | Nm       |                  | 3      |         |    |
| r80           | -   |     | CO: Torque actual value                                 | 0.00                                    | Nm       |                  | 3      |         |    |
| r81           |     |     | CO: Torque utilization                                  | 01                                      | %        |                  | 3      |         |    |
| r82[0]        |     |     | CO: Actual active nower Linemonthed                     | -0.00                                   | MAY      |                  | 3      |         |    |
| r02[0]<br>r83 | +   |     | CO: Elux setnoint                                       | 100.0                                   | 96       |                  | 3      |         |    |
| 100           |     |     | CO. Franciscipoliti                                     | 400.0                                   | 70<br>07 |                  | 0      |         |    |

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#### Rotor position identification

If your system is equipped with a synchronous motor, a new rotor position identification is required because of the performed encoder identification. This is indicated by the error ID F31811 displayed in the alarm window.

| 6.  | Enter "1" | in the | p1990  | parameter | in the | expert | list. |
|-----|-----------|--------|--------|-----------|--------|--------|-------|
| ••• |           |        | 10.000 |           |        |        |       |

| Figure | 2-12 |
|--------|------|
|--------|------|

| arameter I | D | +   + | Parameter text  | Value Antrieb_1                        | Unit | Changeable to | Access | Minir |
|------------|---|-------|---|--|------|---------------|--------|-------|
| 987        |   |       | Rotor position identification trigger characteristic                    | 0                                      | %    |               | 3      |       |
| 990        |   |       | Rotor position identification angular commutation offset, commissioning | 1                                      | -    | Operation     | 3      | 0     |
| 2000       |   |       | Reference speed reference frequency                                     | 3000.00                                | rpm  | Ready to run  | 2      | 6     |
| 2001       |   |       | Reference voltage   | 1000                                   | Ý    | Ready to run  | 3      | 10    |
| 2002       |   |       | Reference current   | 9.50                                   | A    | Ready to run  | 3      | 0.1   |
| 003        |   |       | Reference torque  | 10.93                                  | Nm   | Ready to run  | 3      | 0     |
| 004        |   |       | Reference power   | 3.4                                    | K/V  |               | 3      |       |
| 032        |   | +     | Master control, control word effective                                  | OH                                     | -    |               | 2      |       |
| 037        |   |       | PROFIBUS STW1.10 = 0 mode   | Freeze setpoints and continue to pro 💌 | -    | Ready to run  | 3      |       |
| 038        |   |       | PROFIBUS STW/ZSW interface mode   | SIMODRIVE 611 universal (1)            | -    | Ready to run  | 3      |       |
| 045        |   |       | CI: Clock synchronous PROFIBUS signal source for master sign-of-life    | Aptrieb 1 : r2050[3]                   | -    | Ready to run  | 3      |       |
| 050101     |   | +     | CO: PROFIBUS PZD receive word, PZD 1                                    | 47FH                                   | -    |               | 3      |       |
| 051101     | ľ | +     | CI: PROFIBUS PZD send word, PZD 1                                       | Aptrieb 1 : r2089[0]                   | -    | Operation     | 3      |       |
| 053101     | ľ | + +   | PROFIBUS diagnostics send PZD word, PZD 1                               | 787H                                   | -    |               | 3      |       |
| 101030     | ľ | +     | CO: PROFIBUS PZD receive double word. PZD 1 + 2                         | 47FFFFFH                               | -    |               | 3      |       |
| 161101     | ť |       | Ct PROFIBLIS PZD send double word. PZD 1 + 2                            | 0                                      |      | Operation     | 3      |       |
| 163(0)     | ť | ÷ .   | PROFIBILS diagnostics PZD send double word, PZD 1 + 2                   | 387EED8H                               |      | operation     | 3      |       |
| 165        | ľ |       | PROFIBILS diagnostics master sign-of-life                               | 0                                      | -    |               | 3      |       |
| 175(0)     |   |       | PROFIBILS diagnostics telegram offset P7D receive P7D 1                 | 2                                      | -    |               | 3      |       |
| 76[0]      |   |       | PROFIBILS P7D diagnostics telegram offset send. P7D 1                   | 2                                      | -    |               | 3      |       |
| 180(0)     |   |       | B: PROFIBLIS send status word 1. Bit 0                                  | Antriab 1 : r899.0                     | -    | Operation     | 3      |       |
| 081[0]     |   |       | B: PROFIBLIS send status word 2, Bit 0                                  | Antrick 1 : r51 0                      | -    | Operation     | 3      |       |
| 08201      | - |       | B: PROFIBILS cand free status word 3. Bit 0                             | Antrieb_1.151.0                        | -    | Operation     | 3      |       |
| 002[0]     | - |       | B: PROFIDUS send free status word 4, Bit 0                              | Antrieb_1.12193.5                      | -    | Operation     | 3      |       |
| 000[0]     | ÷ |       | DROEIDLIS invest status word. Status word 1                             | 0                                      | -    | Operation     | 3      | OH    |
| 190101     | ÷ |       | CO: PROFIBILS and status word. Status word 1                            | 7874                                   | -    | Operation     | 2      | OIT   |
| 000        | - | +     | CO. PROFIBUS Send status word, status word 1                            | 4754                                   | -    |               | 2      |       |
| 004        |   | 4     | DO: PROFIDUS PZD1 receive bit-senial                                    | 4/FD                                   | -    |               | 2      |       |
| 000        |   | +     | DO: PROFIDUS PZD2 received bit-serial                                   | COLON COLON                            | -    |               | 0      |       |
| 000        |   | +     | BO: PROFIBUS PZD3 received bit-serial                                   |  | -    |               | 0      |       |
| 193        |   | +     | BU: PROFIBUS PZD4 received bit-serial                                   | FUUUH                                  | -    |               | 3      |       |
| 94         |   | +     | BU: PROFIBUS PZD received bit-serial                                    | OH                                     | -    |               | 3      |       |
| 195        | _ |       | BU: PROFIBUS PZD received bit-serial                                    | OH                                     | -    | 0 "           | 3      |       |
| 198[0]     | _ | + +   | Invert connector-binector converter bit-serial                          | UH                                     | -    | Operation     | 3      | UH    |
| 099[0]     | _ | +     | CI: PROFIBUS PZD selection receive bit-serial                           | 0                                      | -    | Operation     | 3      |       |
| 100[0]     | _ | +     | Setting the fault number for fault response                             | 0                                      | -    | Operation     | 3      | 0     |
| 101[0]     |   | +     | Setting the fault response  | NONE (0)                               | -    | Operation     | 3      |       |
| 103[0]     | C |       | BI: 1. Acknowledge faults   | Antrieb_1 : r2090.7                    | -    | Operation     | 3      |       |
| 04[0]      | С |       | BI: 2. Acknowledge faults   | 0                                      | -    | Operation     | 3      |       |
| 105[0]     | С |       | BI: 3. Acknowledge faults   | 0                                      | -    | Operation     | 3      |       |
| 06[0]      | С |       | Bl: External fault 1  | 1                                      | -    | Operation     | 3      |       |
| 107[0]     | С |       | Bl: External fault 2  | 1                                      | -    | Operation     | 3      |       |
| 08[0]      | С |       | Bl: External fault 3  | 11                                     | -    | Operation     | 3      |       |
| 09[0]      |   | +     | Fault time removed in milliseconds                                      | 0                                      | ms   |               | 3      |       |
| 10[0]      |   | +     | Alarm number  | 13000                                  | -    |               | 2      |       |
| 111        |   |       | Alerm counter   | 2                                      |      | Operation     | 3      | 0     |

Upgrading the SINAMICS Firmware Entry ID: 21624542

#### 2.2.3 Parameter adaptations for incremental encoders

If you use an incremental encoder at the drive, it may be required to adapt the p1082 parameter in the expert list. This is indicated by the error ID F07432 displayed in the alarm window.

For permanent-magnet synchronous motors, it is to be avoided in the field weakening that an EMF which is too high is applied to the terminals and consequently to the converter in case of a failure of the field weakening power. For this reason, boundary conditions were introduced for the p1082 parameter.

To meet the boundary conditions for the p1082 parameter, you must not enter a value which is larger than the result of the following formula:

 $p1082 = \frac{9590}{p316}$ 

The value 9590 is a constant in the formula

|          | n |     | Decementer tout                                       | Malue Antrials 4                       | Unit     | Changeable to | A      | B.Rissis |
|----------|---|-----|---|--|----------|---------------|--------|----------|
| arameter | C | • • | Parameter text  | Value Anu leb_1                        | Unit     | Readulta rup  | access | IVIIIII  |
| 1082[0]  | D |     | Maximum sneed   | 8500.000                               | rnm      | Ready to run  | 1      | 0        |
| 1083(0)  | D |     | CO: Sneed limit in positive direction of rotation     | 210000 000                             | rom      | Operation     | 2      | 0        |
| 1000[0]  |   |     | Sneed limit in positive affective                     | 8300.000                               | rpm      | operation     | 2      | •        |
| 108601   | D |     | CO: Speed limit positive direction of rotation        | -210000.000                            | rpm      | Oneration     | 2      | -210     |
| 1000[0]  |   |     | Sneed limit negative affective                        | 8300.000                               | rpm      | operation     | 2      | -210     |
| 112101   | D |     | Remon function generator ramon down time              | 10.000                                 | npm<br>e | Oneration     | 1      | 0        |
| 1121[0]  | D |     | OEE2 reans down time                                  | 0.000                                  | 0        | Operation     | 2      | 0        |
| 1133[0]  | C |     | Bi: Epobles the remp function reperator               | Antrials 4 + s2000 4                   | 0        | Peedu to run  | 2      | 0        |
| 1140[0]  | c |     | Di. Enables the ramp-runction generator               | Antrieb_1 : r2090.4                    | -        | Ready to run  | 2      |          |
| 1141[0]  | 0 |     | Di: Start ramp-runction generator                     | Antrieb_1.12090.5                      | -        | Ready to run  | 2      |          |
| 1142[0]  | 0 |     | Di. Eriable speed setpoliti                           | Antrieb_1:r2090.6                      | -        | Ready to run  | 3      |          |
| 1100[0]  | 0 |     | Ci. Speed controller speed setpoint 1                 | 0                                      | -        | Ready to run  | 3      |          |
|          | C |     | Ci. Speed controller speed setpoint 2                 | U 0.000                                | -        | Ready to run  | 3      |          |
| 1109     |   |     | CO: Speed controller, speed setpoints 1 and 2         | 0.000                                  | rpm      |               | 3      |          |
| 170      | - | _   | Co: Speed controller, setpoint sum                    | 0.000                                  | rpm      | Onentian      | 3      | 011      |
| 1169[0]  | U | +   | Speed setpoint configuration                          | JH A LLLL A BOODTON                    | -        | Operation     | 2      | UM       |
| 1190     |   |     | Ct: DSC position deviation XERR                       | Antrieb_1 : r2060[6]                   | -        | Ready to run  | 3      |          |
| 1191     | - |     | CI: DSC position controller gain KPC                  | Antrieb_1 : r2060[8]                   | -        | Ready to run  | 3      |          |
| 1192[0]  | D |     | DSC enc selection                                     | Encoder 1 (motor encoder) (1)          | -        | Operation     | 3      |          |
| 1193[0]  | D |     | DSC encoder adaptation factor                         | 1.000                                  | -        | Operation     | 3      | U        |
| 1215     |   |     | Motor holding brake configuration                     | No motor holding brake being used (U 💌 | -        | Operation     | 2      |          |
| 1216     |   |     | Motor holding brake, opening time                     | 100                                    | ms       | Operation     | 2      | 0        |
| 1217     |   |     | Motor holding brake closing time                      | 100                                    | ms       | Operation     | 2      | 0        |
| 1226     |   |     | Threshold for zero speed detection                    | 20.0                                   | rpm      | Operation     | 2      | 0        |
| 1227     |   |     | Zero speed detection monitoring time                  | 4.000                                  | S        | Operation     | 2      | 0        |
| 1228     |   |     | Pulse cancellation delay time                         | 0.000                                  | S        | Operation     | 2      | 0        |
| 1240     |   |     | Vdc controller or Vdc monitoring configuration        | Inhib Vdc ctrl (0)                     | -        | Operation     | 3      |          |
| 1244     |   |     | DC link voltage threshold, upper                      | 750                                    | V        | Operation     | 3      | 400      |
| 1248     |   |     | DC link voltage threshold, lower                      | 450                                    | V        | Operation     | 3      | 100      |
| 1250     |   |     | Vdc controller proportional gain                      | 1.00                                   | AN       | Operation     | 3      | 0        |
| 1300[0]  | D |     | Open-loop/closed-loop control operating mode          | Speed control (with encoder) (21)      | -        | Ready to run  | 2      |          |
| 1317[0]  | D |     | V/f control diagnostics activation                    | Off (p1300 eff) (0)                    | -        | Ready to run  | 3      |          |
| 1318[0]  | D |     | V/f control ramp-up/ramp-down time                    | 10.000                                 | s        | Operation     | 3      | 0        |
| 1319[0]  | D |     | V/f control voltage at zero frequency                 | 0.0                                    | V        | Operation     | 3      | 0        |
| 1326[0]  | D |     | V/f control programmable characteristic frequency 4   | 150.00                                 | Hz       | Operation     | 3      | 0        |
| 1327[0]  | D |     | V/f control programmable characteristic voltage 4     | 228.0                                  | V        | Operation     | 3      | 0        |
| 1400[0]  | D | +   | Speed control configuration                           | 1.A4H                                  | -        | Operation     | 2      | OH       |
| 1404[0]  | D |     | Sensorless operation changeover speed                 | 210000.0                               | rpm      | Operation     | 3      | 0        |
| 406      |   | +   | CO/BO: Control word speed controller                  | OH                                     | -        |               | 3      |          |
| 407      |   | +   | CO/BO: Status word speed controller                   | 10H                                    | -        |               | 3      |          |
| 408      |   | +   | CO/BO: Closed-loop control status word 3              | 1H                                     | -        |               | 3      |          |
| 1414[0]  | D | +   | Speed setpoint filter activation                      | OH                                     | -        | Operation     | 3      | OH       |
| 1415[0]  | D |     | Speed setpoint filter 1 type                          | Low pass: PT1 (0)                      | -        | Operation     | 3      |          |
| 1416[0]  | D |     | Speed setpoint filter 1 time constant                 | 0.00                                   | ms       | Operation     | 3      | 0        |
| 1417[0]  | D |     | Speed setpoint filter 1 denominator natural frequency | 2000.0                                 | Hz       | Operation     | 3      | 0.5      |
| 144.0001 | D |     | Speed setpoint filter 1 deporting tor damping         | 0.700                                  | -        | Operation     | 3      | 0.04     |