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Quick Startup Guide for SIMODRIVE 611 Universal

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We reserve the right to modify functions, technical data, standards, drawings and parameters.

We have checked the contents of this document to ensure that they coincide with the described hardware and software. However, deviations cannot be completely ruled-out, so we cannot guarantee complete conformance. However, the information in this document is regularly checked and the necessary corrections will be included in subsequent editions. We are thankful for any recommendations or suggestions.

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NOTE:

These instructions do not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, please contact your local Siemens office.

Further, the contents of these instructions shall neither become a part of nor modify any prior or existing agreement, commitment or relationship. The sales contract contains the entire obligation of Siemens Energy & Automation. The warranty contained in the contract between the parties is the sole warranty of Siemens Energy & Automation. Any statements contained herein do not create new warranties nor modify the existing warranty.

Note:

This Quick Startup Guide is not an autonomous document, but is intended to direct users to the section in the **Operating Instructions** which are important for start-up. Thus, these brief instructions can only be completely valid when used in conjunction with the Operating Instructions. It is especially important to observe the warning and information regarding potential hazards in the Operating Instructions.

Warning:

- Electrical equipment has parts an components which are at hazardous voltage levels.
- If the warning information in the **detailed Operating Instructions** is not observed, this can result in severe bodily injury or material damage.
- Only appropriately qualified personnel may work with this equipment.
- These personnel must be knowledgeable with all of the warning information and service/maintenance measures of the **Operating Instruction.**

Perfect and safe operation of this equipment assumes professional transport, storage, erection and installation as well as careful operating control and service.

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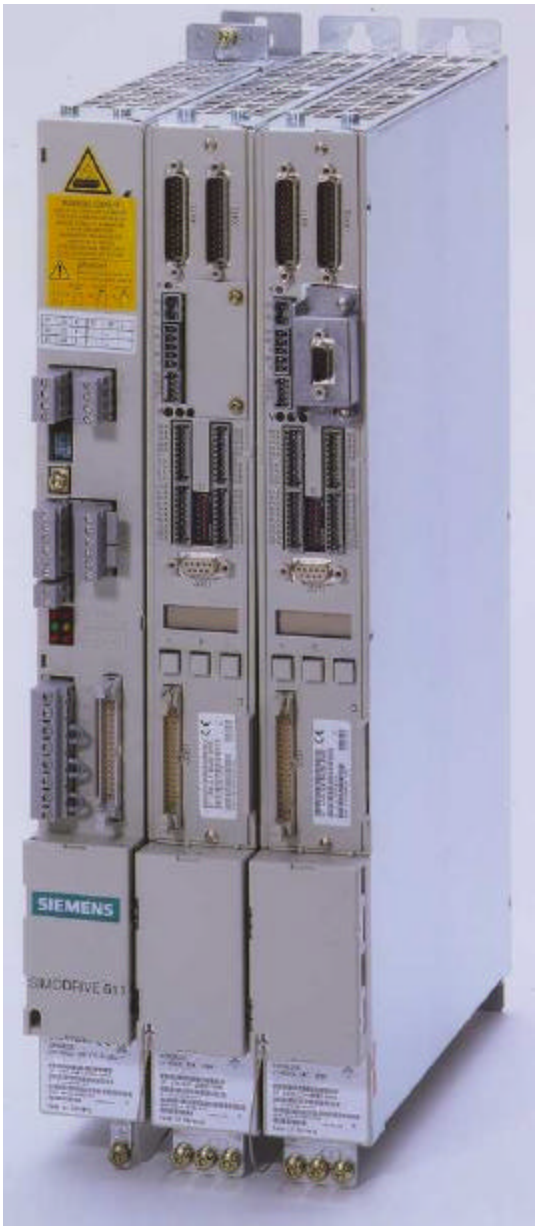
Setup the hardware
Section 1 Table of Contents:

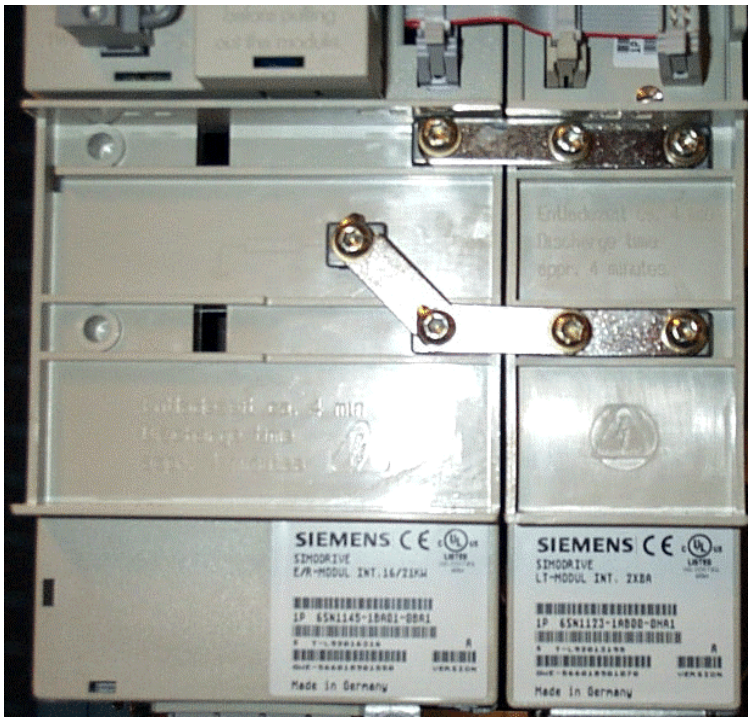
1.1 Overview



Picture 1-1 Setup

➢ The SIMODRIVE 611 universal should be mounted as pictured. The Infeed unit is always at the far left followed by the Power Modules to the Right with the largest capacity Power Module closest to the Infeed Modules and decreasing in amperage there on.

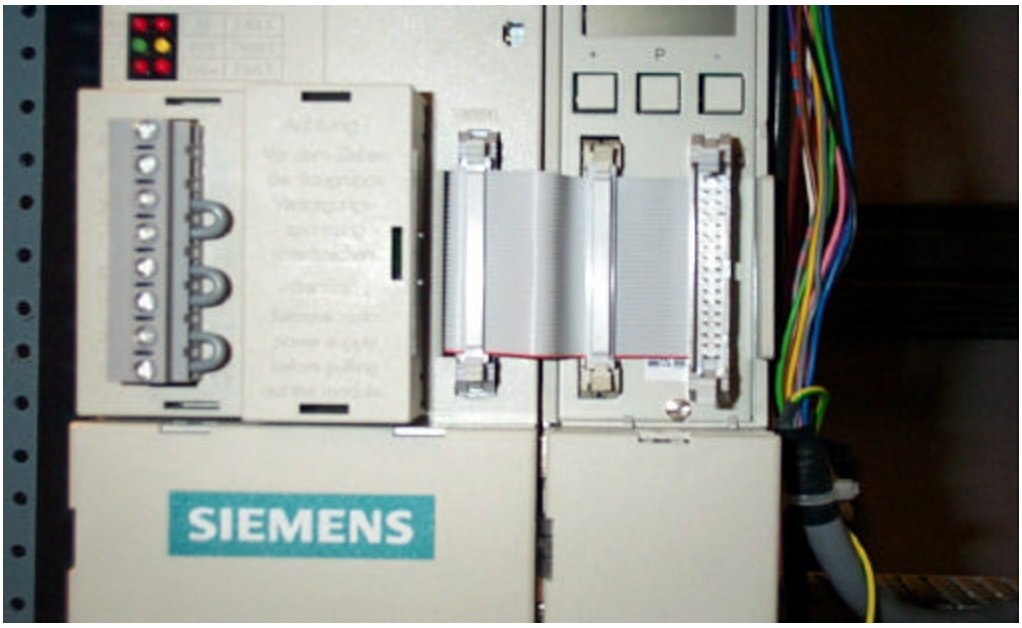
1.2 DC-link bus



Picture 1-2 DC-link

- The DC-link is connected via bus-connectors, the left connector is used to connect the DC-link to the discharge resistor for bleeding off the DC bus voltage when powered off.

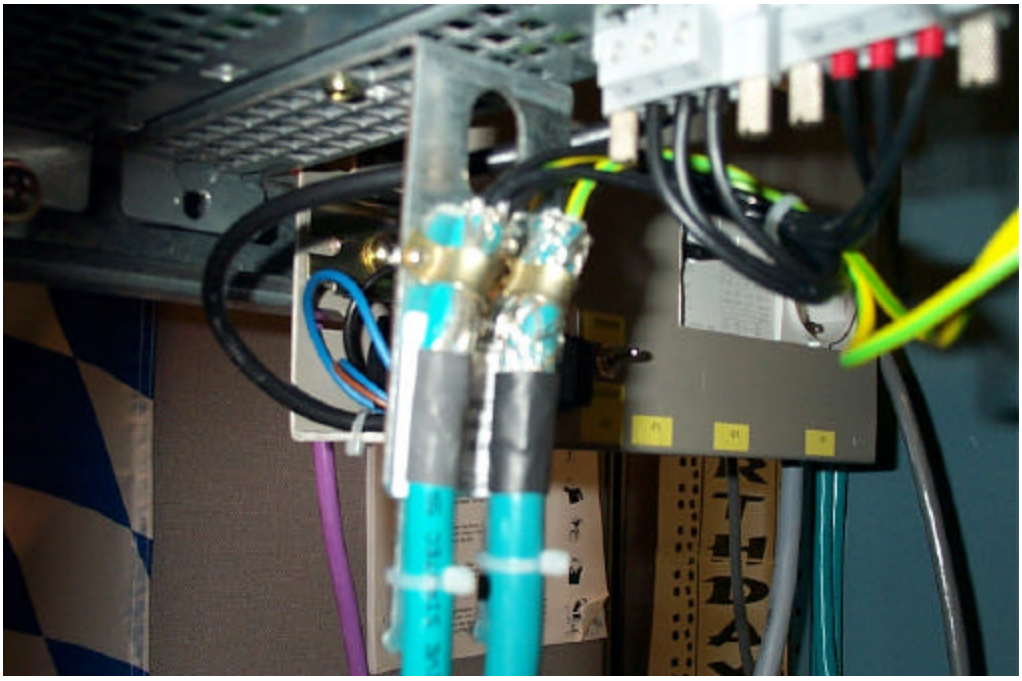
1.3 24V electronic power supply



Picture 1-3 24V electronic power supply

- The 24V, 15V, & 5V DC electronic power supply is connected via the ribbon cable in front of the drive. The cable is provided with every Power Module.

1.4 Shield terminal plates



Picture 1-4 Shield terminal plate

- It is highly recommended to use shield terminal plates for the connection of the motor power cables to assure a good ground connection

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Parameterization of the Drive Section 2 Table of Contents:

2.1 General Information

You can parameterize “SIMODRIVE 611 universal” as follows:

- Using the display and operator unit on the front panel of “SIMODRIVE 611 u” **(see section 3)**
- Using the parameterizing and start–up tool (SimoComU) on a PG/PC) **(see section 4)**
  - SimoComU via serial interface (RS232/RS485)
  - SimoComU via PROFIBUS–DP (CP 5511/CP 5611 at PC: option module at drive)

2.2 Operating status of the drive

General

The display and operator unit is used to

- Selecting, displaying and changing parameters, sub–parameters and parameter values (refer to Section 2.2.1)
- Display and control when faults and alarms occur (refer to Section 6.2)

Operating statuses of the display unit

The display unit on the front panel of the “SIMODRIVE 611 universal“ control board can have the f

Operating status	Selection	Description
Power–up mode	Automatic after power–on	• Power–on before first start–up: The following is displayed “A1106” or “b1106”.
↓	The parameterizing mode is selected by pressing any key on the operator control unit (PLUS/MINUS/P key).	• Power–on after the first start–up: After power–on and error–free run–up, the system goes into cyclic operation and “_ _ _ run” is displayed.
Parameterizing mode (refer to Section 3.2.1)	This mode can be selected from • Power–on mode or • Alarm mode	The parameterizing mode is used to select parameters and sub–parameter numbers and to display and change parameter values. **Note:** You cannot change into another mode from the parameterizing mode. The other modes are automatically selected.
↑	The parameterizing mode is selected by pressing the MINUS key on the operator control unit.	
Alarm mode (refer to Section 7.2)	Automatically after at least one fault or alarm occurs	The alarm mode is used to display faults and alarms.

2.3 Preparing commissioning

The “SIMODRIVE 611 universal” control board can be commissioned the fastest if the following prerequisites are checked and fulfilled before commissioning:

- The SIMODRIVE drive group has been configured.
- The wiring and connections have been completed.
- The Order Nos. (MLFBs) of the power module, motor and encoder are known.

Checks for the supply infeed module (NE module) Switch S1:

Check the settings of this switch on the NE and monitoring module (e.g. is the line supply voltage set to 400 V or to 480 V?)

Caution!

The following is generally valid: Before powering–up or down using the main switch or a line contactor, terminal 63 (pulse enable) and/or terminal 48 (start terminal, contactor control) must be de–energized or disconnected at the supply infeed module (NE module)!
Otherwise, there is a danger that the line supply infeed module will be destroyed.

Before start-up check following tasks:

Now you can power-up the drive. The following run-up should appear. For troubleshooting see chapter 5.

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Parameterization with the display and operator unit Section 3 Table of Contents:

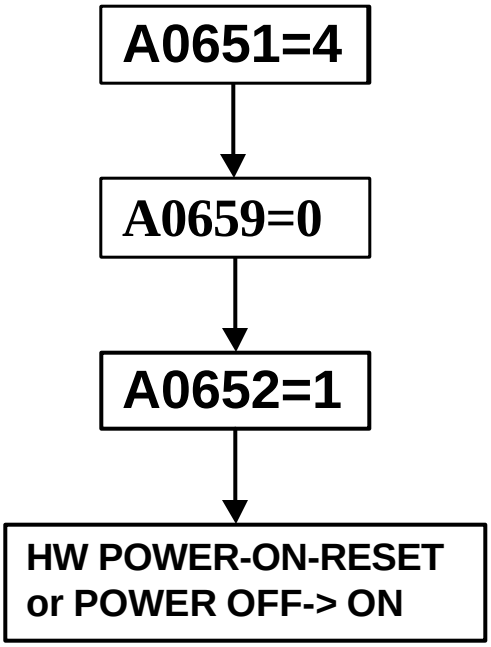
3.1 Basic commissioning

- How to use the operator control unit, see chapter 4.2.1 Function Description.

Please make sure that you have checked all tasks in section 2.3 before you power up the equipment

- A0651 means you are commissioning axis a, if you have a 2 axis module, by pushing the + and – button simultaneously you can switch to axis b

If the drive was already commissioned perform the following steps to establish the initialization status



Remove write protection

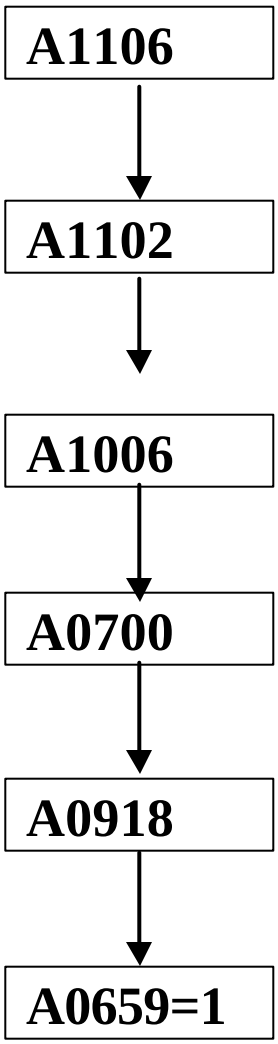
Establish the initialization status

Start to write into the FEPROM, wait until the write operation has been completed (P0652 returns to 0)

For the HW power-on-reset push red illuminated R/F bottom below the signal cable connectors (see SIMODRIVE 611 universal Function Description section 1.4.2)

From this point on, it's the same whether it's the first commissioning or not

- Execute control hardware configuration; the display on the drive should be A1106 for drive A or B1106 for drive B, otherwise refer to section 6. By pressing the + and – key on the operator control unit simultaneously you can toggle between axis A and B.



Power module code no. Only set, if there is no automatic power module identification. For code see table 3.1.

Motor code number For code see table 3.2. If you use a third party motor see additional information

Encoder code number
For code see table 3.2.

Operating mode
For code see table 3.3.

PROFIBUS node address. Only if PROFIBUS option module is used
Select address 0 to 126

Execute initialization
Start to write to the FEPROM, wait until the write operation has been completed (P0652 returns to 0)
After a few seconds "___run" should be displayed.

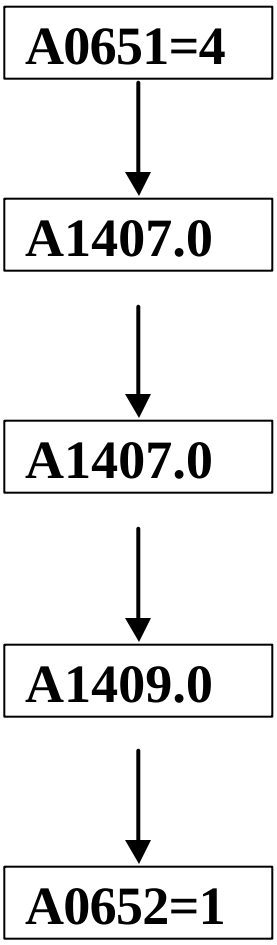
If you have a PROFIBUS option module installed and there is no active master class one in the system, the Warning "E A831" occurs (see troubleshooting section 6).

If you have a 2 axis plug-in unit and power module repeat the same procedure for axis B.

3.2 Controller optimization

It is highly recommended to use SimoComU to optimize the Simodrive 611U (see section 4.4)!

3.2.1 Optimization of the speed and current controller



Remove write protection

Increase the sub-parameter 0 (proportional gain Kp) until the motor
makes a whistling sound

Reduce the sub-parameter 0 (proportional gain Kp) until this whistling
sound disappears

In sup-parameter 0 the integral action time T_N can be retained

Start to write to the FEPROM, wait until the write operation has been completed (P0652 returns to 0)

To set current and speed setpoint filter use SimoComU or see SIMODRIVE 611U Function Description.

3.2.2 Optimization of the position controller (only in positioning mode)

The position loop gain Kv defines which following error **s** is obtained at which axis traversing velocity.

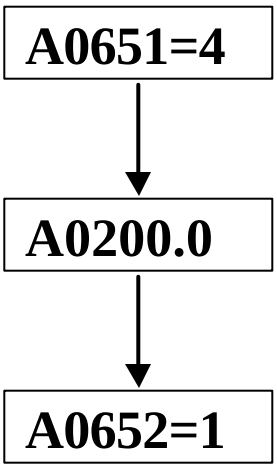
low Kv factor: slow response to a setpoint (reference value), actual value difference, **s** is high
high Kv factor: fast response to a setpoint (reference value), actual value difference, **s** is low

$$K_v = \frac{Velocity}{Following\ error}\left[\frac{1000}{\min}\right] \quad or \quad \left[16.6\frac{1}{s}\right]$$

Examples:

Kv factor (P0200:8)	**Description**
= 0.5	at v = 1 m/min, an s of 2 mm is obtained
= 1	at v = 1 m/min, an s of 1 mm is obtained
= 2	at v = 1 m/min, an s of 0.5 mm is obtained

The actual control loop gain of the complete position control loop is influenced by time constants as well as backlash and spring elements of the control loop. This value is shown in P0031.



Remove write protection

Change sub-parameter 0 into calculated Kv factor value

Start to write to the FEPROM, wait until the write operation has been completed (P0652 returns to 0)

3.3 Setting of the drive-functions

For commissioning the functions of the drive see SIMODRIVE 611 universal Function Description chapter 6.

After commissioning re-activate write protection!

A0651=0

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Parameterization with SimoComU
Section 4 Table of Contents:

4.1 Installing SimoCom U

Software supply

The software can be found on the General Motion Control CD-ROM Version 3(DRMS 02055). xxyyzz designates the corresponding software version.

SimoComU_xxyyzz	SET-UP tool for 611 U
Sys611U_xxyyzz	611 U Firmware
dpc31_xxyyzz	Software profibus option module (DP2, DP3)
Toolbox_xxyyzz	Function blocks for profibus (examples)

Installing SimoCom U

- Insert the CD into the CD-ROM drive of your PC.
- Start the "Install SimoComU xxyyzz" program on the General Motion Control CD-ROM Version 3 or use explorer to get to run “setup” in the "Install SimoComU Version xxyyzz\disk1" directory
  This program installs the "SimoComU" software package on your PC. You are prompted through the installation, and you can select the directory in which the software is saved.

4.2 Communicate with the drive

To communicate with the SIMODRIVE 611U via PC you have following options:

- Using the serial interface (X471) with a RS232 or RS485 interface, **first startup of the drive is only possible in this configuration** (see Function Description chapter 4.3.3)

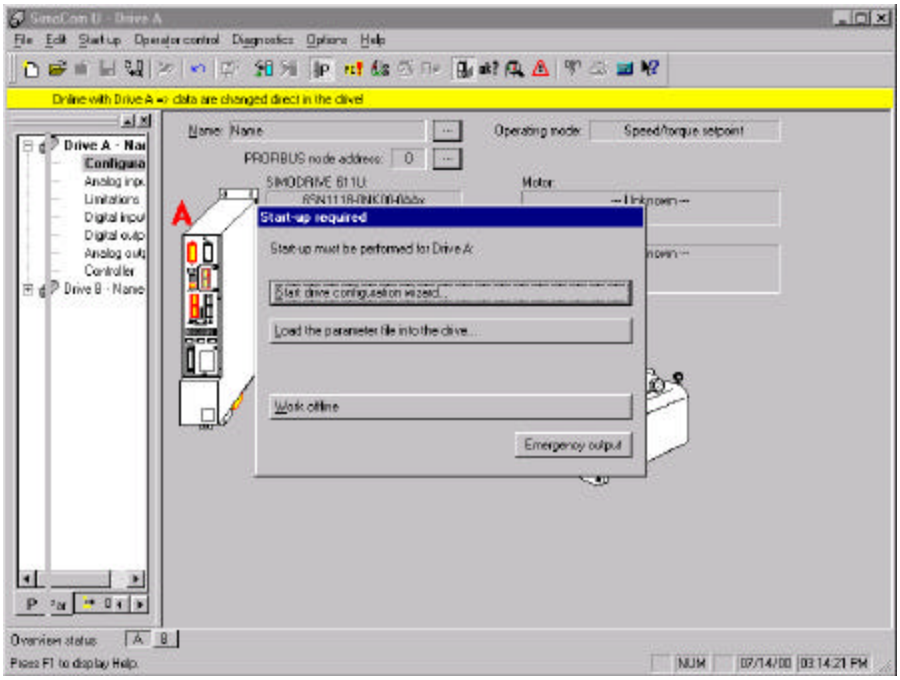
- Communicate via PROFIBUS-DP (CP 5511/CP 5611)with the PC or a PLC as a master (see Function Description chapter 4.3.4)

Please make sure that you have checked all tasks in section 2.3 before you power up the equipment

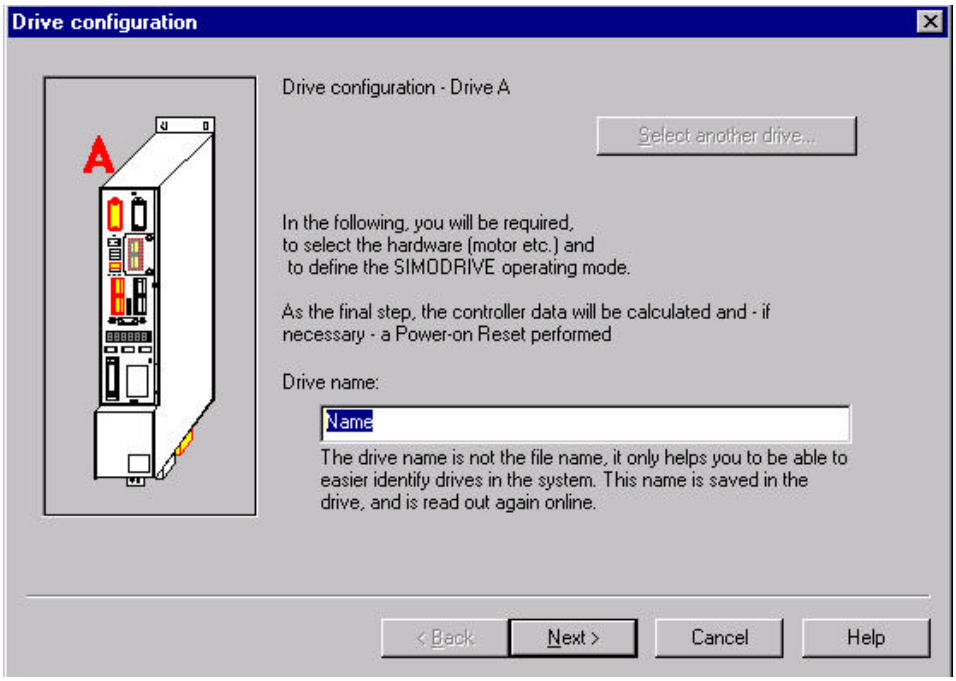
4.3 Startup with SimoCom U

4.3.1 First Startup with SimoCom U

After installing SimoCom U at the first opening of the program the following basic screen is displayed:



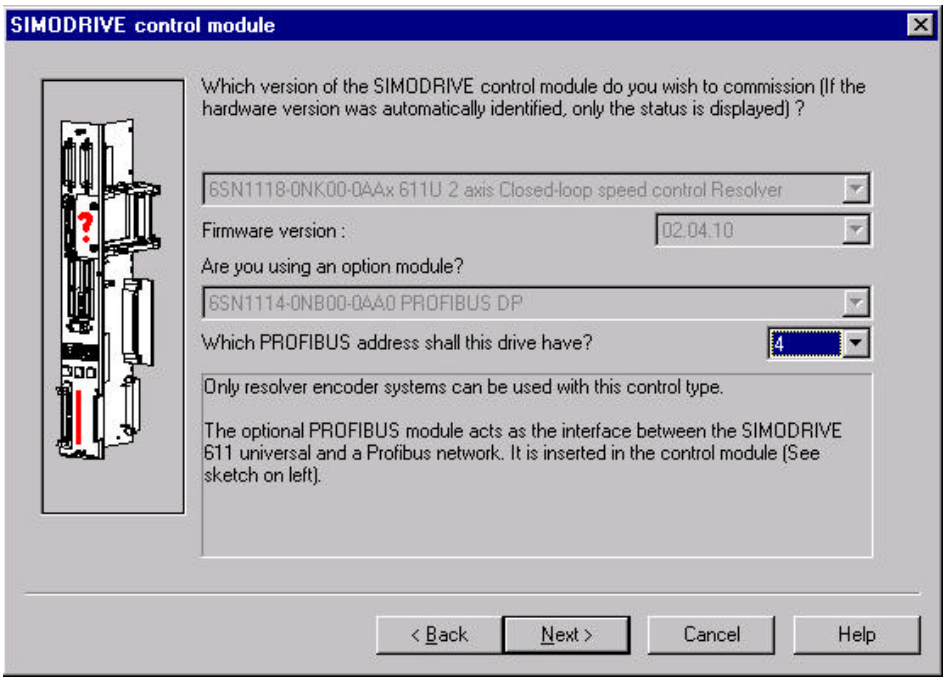
Now start the drive configuration assistant:



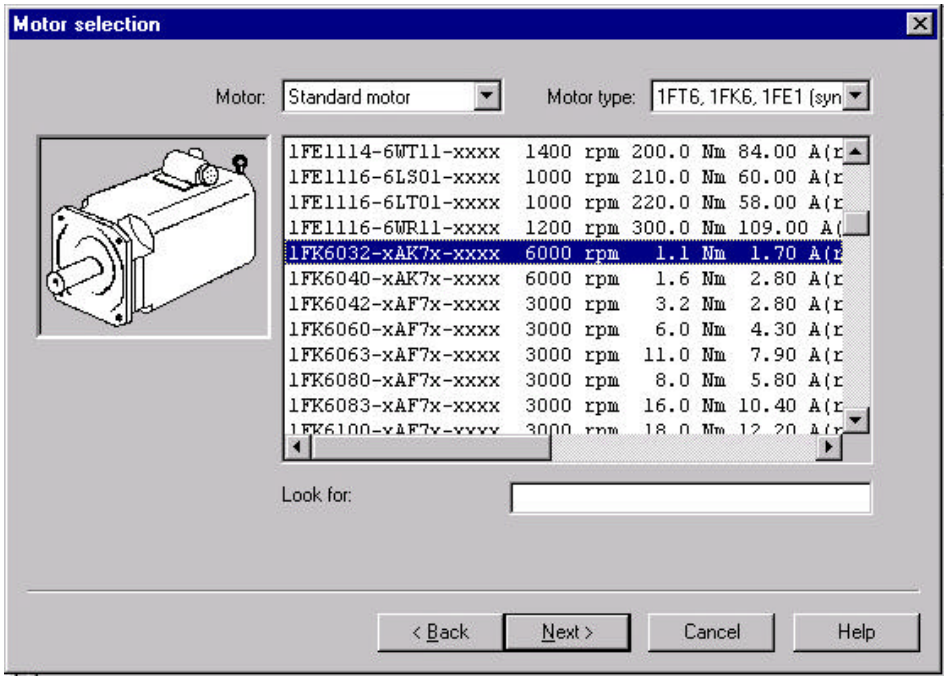
- Select a name for drive A

- Click Next

Now the used control (plug-in unit) and option module is automatically selected.

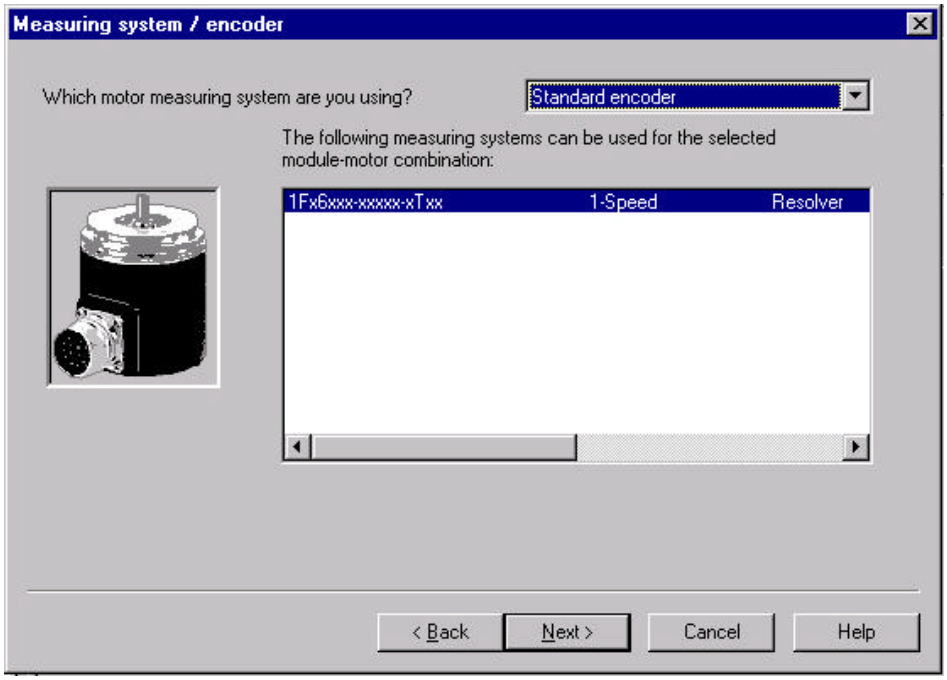


- Select the PROFIBUS address for this drive (same for axis A and B in one plug-in unit)
- Click next

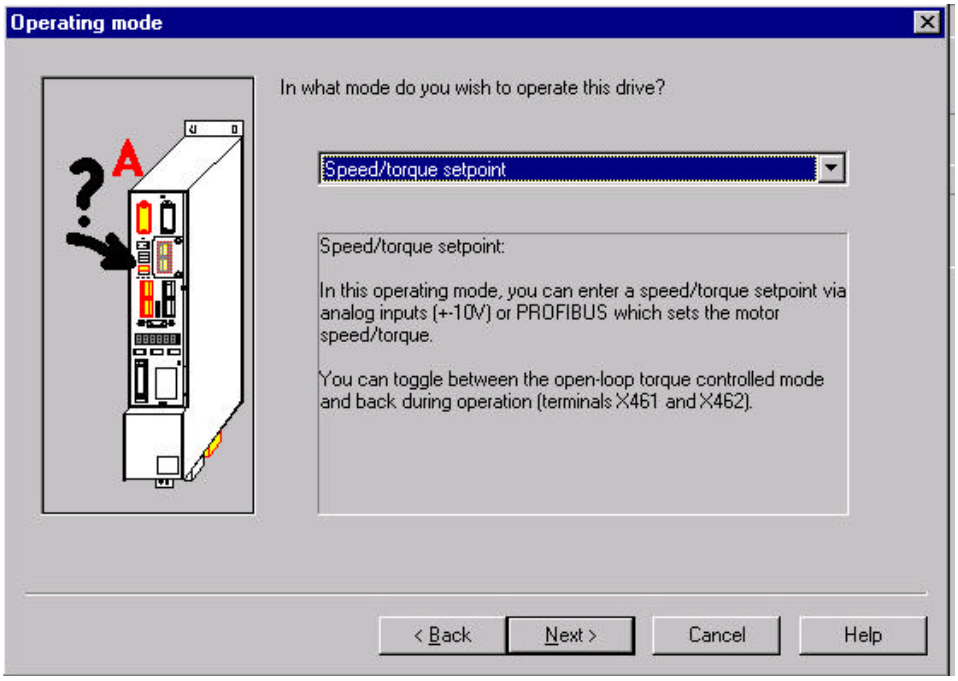


- Select the used motor at this axis
  - For Siemens motors select the motor from the list
  - For third party motors select “Enter data” and the used motor (see additional information)

- Click next
- Now select your measuring system/encoder
  - For Siemens encoders select the encoder from the list

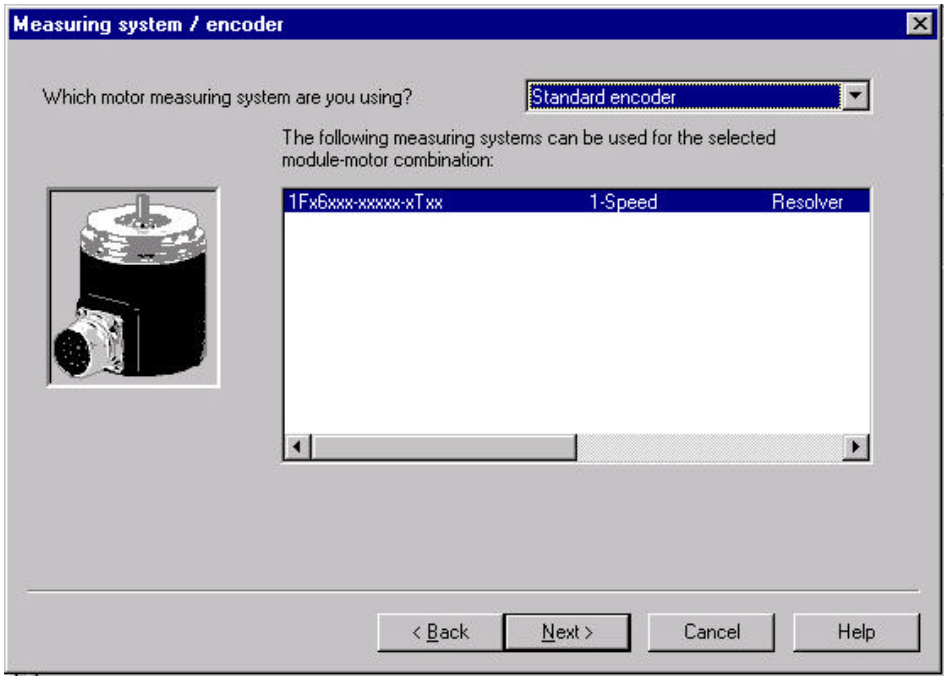


- Click next
- Now select the operation mode of this axis

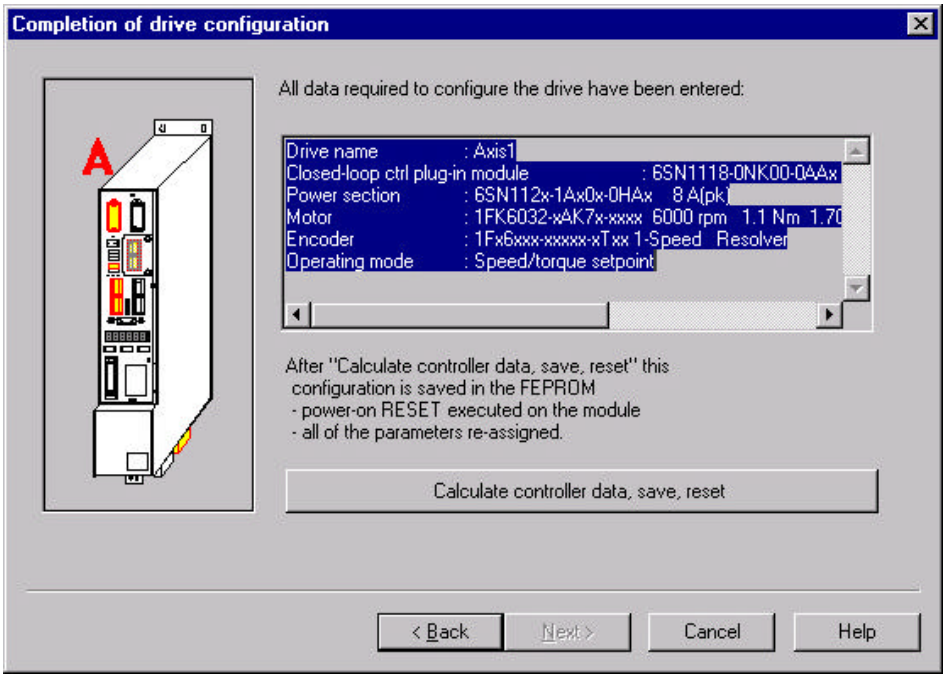


- Click next

- After that you can choose your direct measuring system

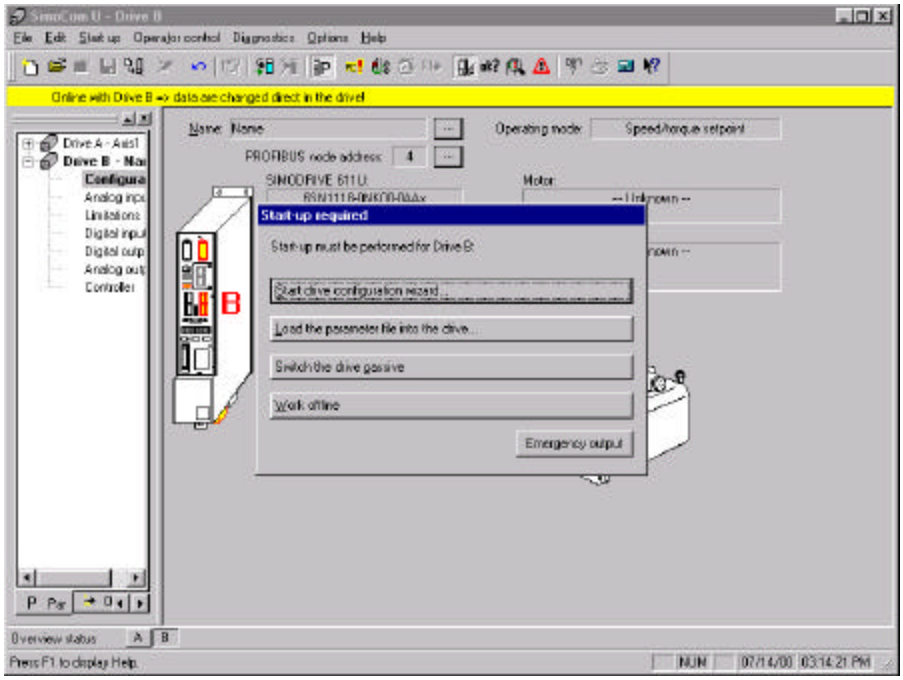


- Click next
- Now SimoComU shows you the selected system, if the data are correct



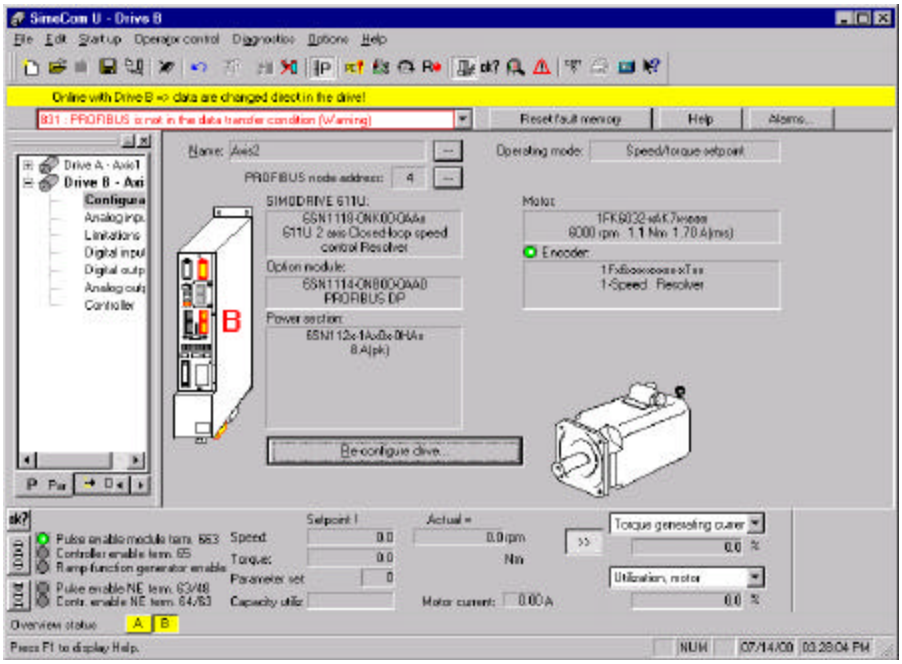
- click “Calculate controller data, save, reset

- If you have a 2 axis power module and plug-in unit, the following screen should appear, otherwise go to the next step



- If you have a 2 axis plug-in unit you have to perform the same procedure for axis B

- After you have done this you should automatically get to the following basic screen of SimoComU



In this case the Warning 831 occurs, because there is no active 1st Class master in the system, but this can also have some other reasons (see Function Description).

4.3.2 Series start–up with SimoCom U

For series start–up of “SIMODRIVE 611 universal” with the “SimoCom U” parameterizing and start–up tool, proceed as follows:

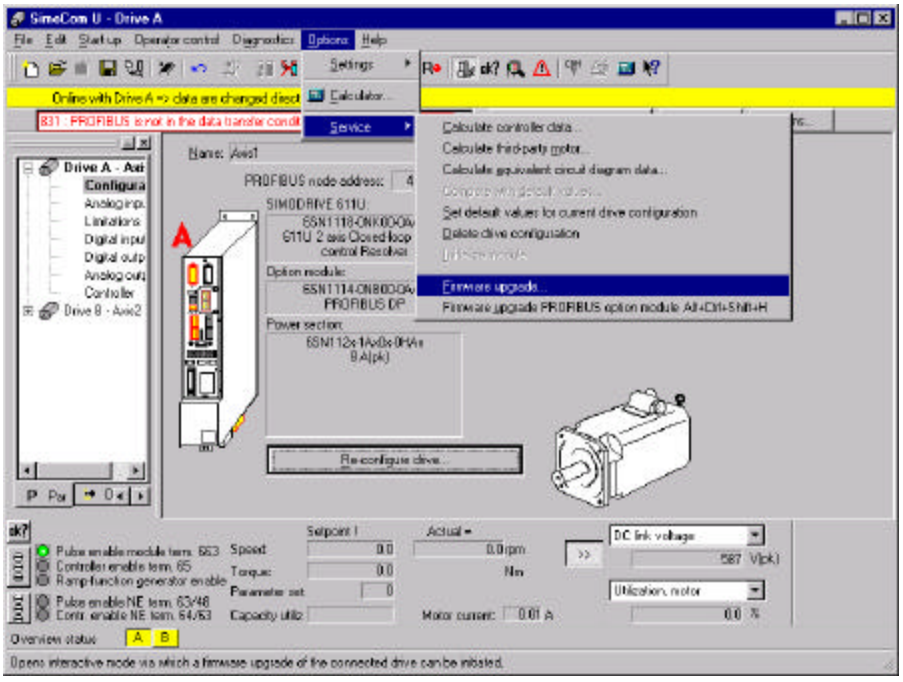
- Power–up the drive group
- Start SimoCom U
- Request online operation with drive A
  - Click–on the “Search for online drives” in the ”Start–up” menu, and select ”Drive A” in the selection box.
    Is the ”start–up required” window displayed?
    - Yes: Click on “Load parameter file into the drive...”
      —> After you have selected the required parameter file for drive A and have pressed ”open”, the file is downloaded into drive A.
    - No: —> Click on the menu “File —> Load into drive
      —> Load and save in the drive”
      —> After you have selected the required parameter file for drive A and have pressed ”open”, the file is downloaded into drive A.

4.4 Updating the system

4.4.1 Installing the 611 U system software (Firmware)

After you have installed the "SimoComU" program, you can install the 611 U system software on the controller board.
It is not absolutely necessary to install the 611 U system software, as the 611 U board is supplied with the software already loaded into it. You can check the Firmware at Diagnostics/Firmware Version

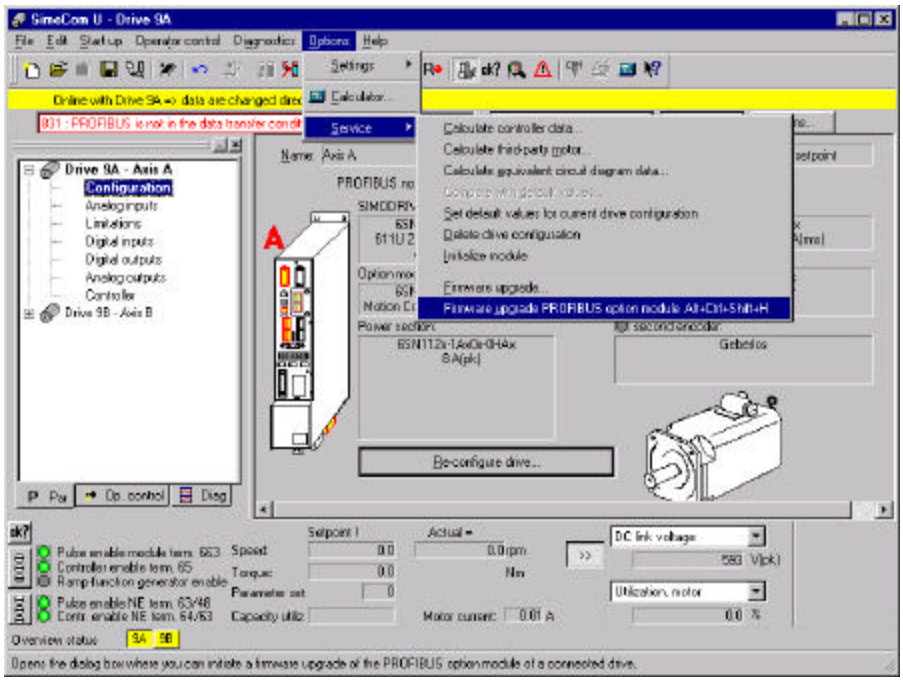
- Connect your PC to the 611 U via the RS232 interface (wiring see Planning Guide)
- Insert the General Motion Control CD into the CD-ROM drive of your PC.
- Start "SimoComU" on your PC
- Go "online"
- Select the menu items "Extras" -> "Service" -> "Firmware upgrade"
- Select the "611u.ufw" file on the CD-ROM for the appropriate firmware version (the firmware can be placed in any directory desired from the CD).



4.4.2 Installing the software of the PROFIBUS option module

After you have installed the "SimoComU" program, you can install the software of the profibus option module.
It is not absolutely necessary to install the profibus option module software, as the 611 U board is supplied with the software already loaded into it.

- Connect your PC to the 611 U via the RS232 interface
- Insert the General Motion Control CD into the CD-ROM drive of your PC.
- Start "SimoComU" on your PC
- Go "online"
- Select the menu items "Extras" -> "Service" -> "Firmware upgrade PROFIBUS option module"
- Select the "v1sl.ufw" file on the CD-ROM for the appropriate firmware version (the firmware can be placed in any directory desired from the CD).

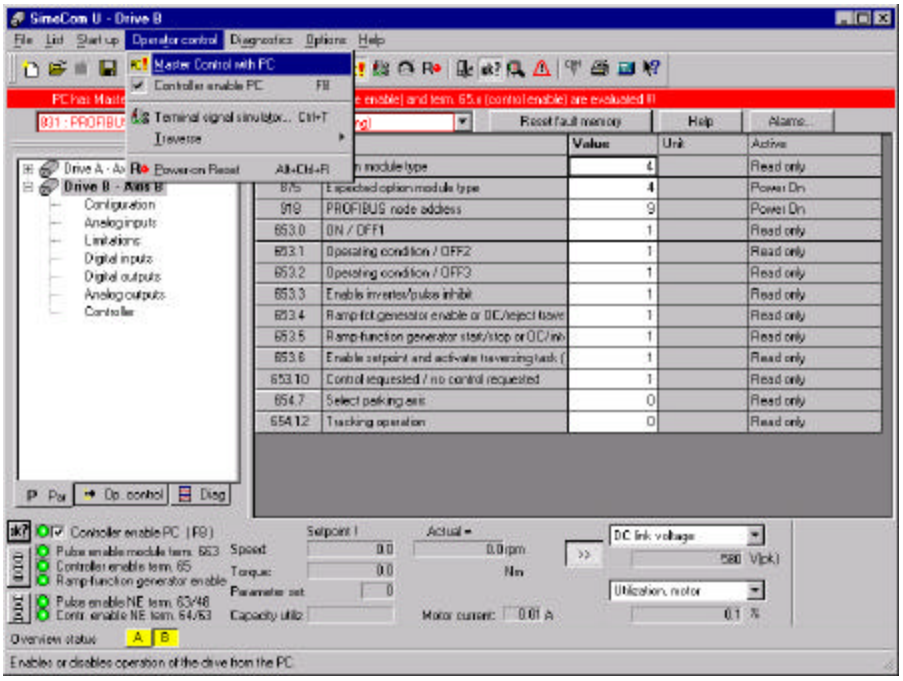


4.5 Controller optimization

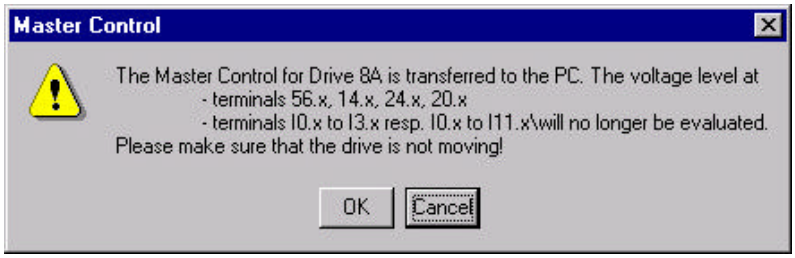
4.5.1 Optimization of the speed and current controller

The speed and current controller is optimized with the automatic controller optimizing feature.

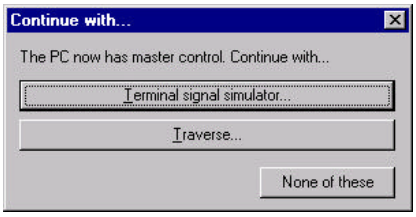
- To execute the automatic controller setting, the master control has to be with the PC. You can find this feature under the menu “Operator control/Master Control with PC”



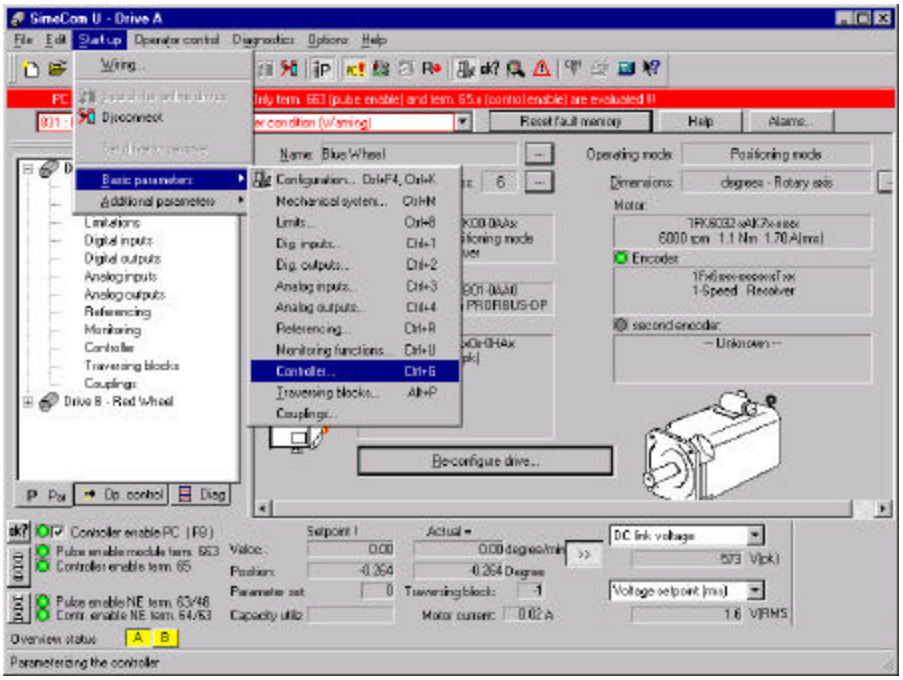
- If drive is not moving, click OK



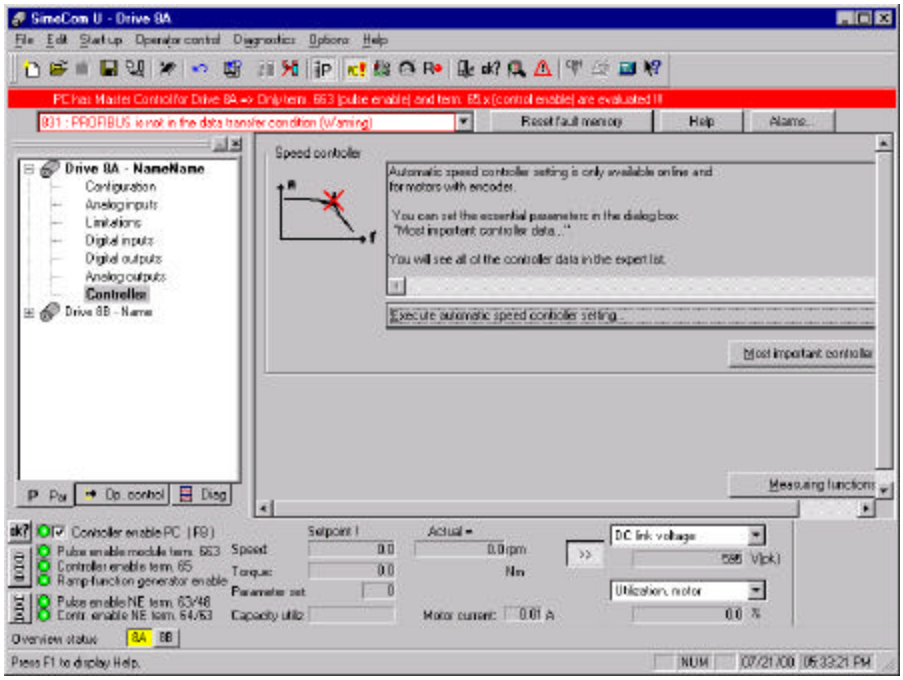
- Select “None of these”



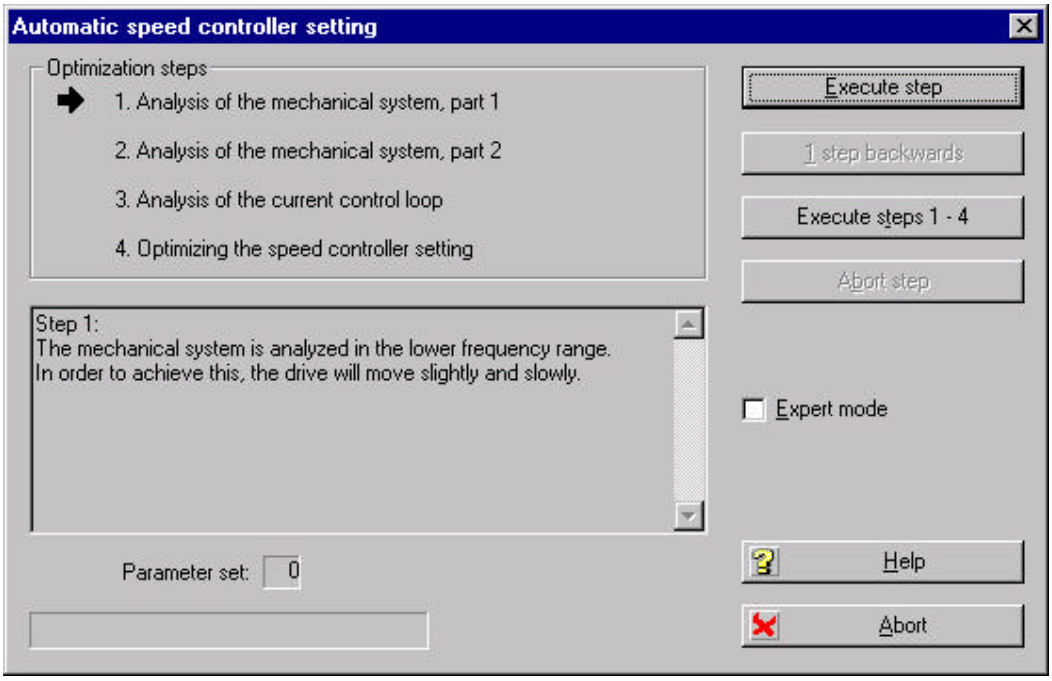
- To start the controller optimization select “Start up/Basic parameters/Controller”



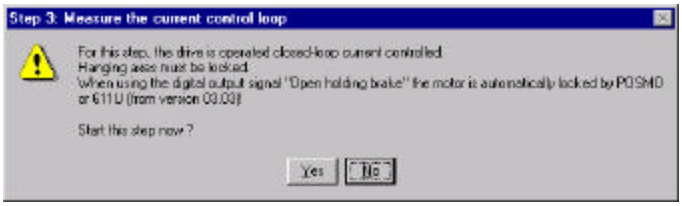
- Push “Execute automatic speed controller setting”



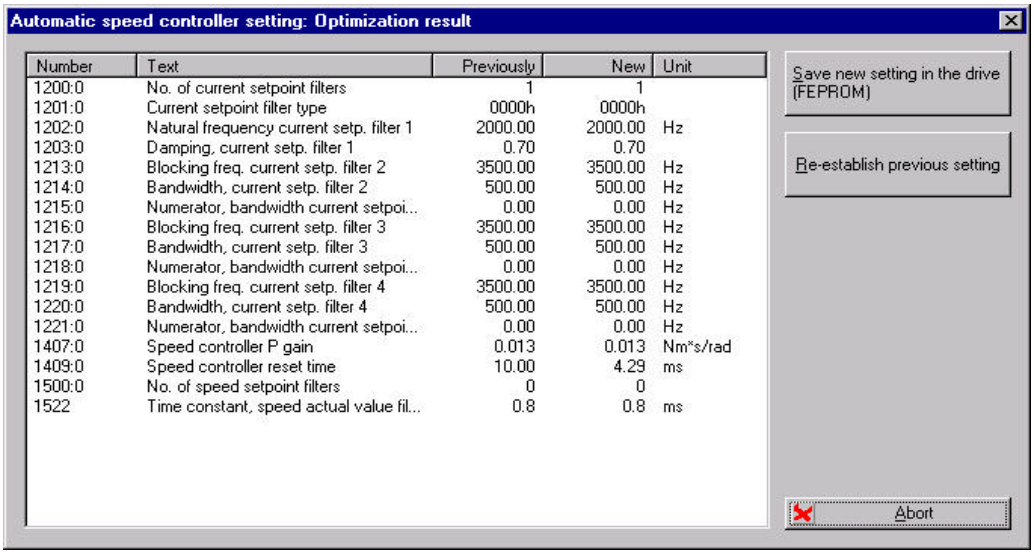
- In the following window click “Execute steps 1 – 4” and the speed and current controller will be optimized.



- If hanging drives are locked, press “Yes”



- In the next window you can see the optimization result. Click “Save setting in the drive (FEPROM)” if this values will work for your application.



4.5.2 Optimization of the position controller (only in the positioning mode)

The position loop gain Kv defines which following error s is obtained at which axis traversing velocity.

low Kv factor: slow response to a setpoint (reference value), actual value difference, s is high
high Kv factor: fast response to a setpoint (reference value), actual value difference, s is low

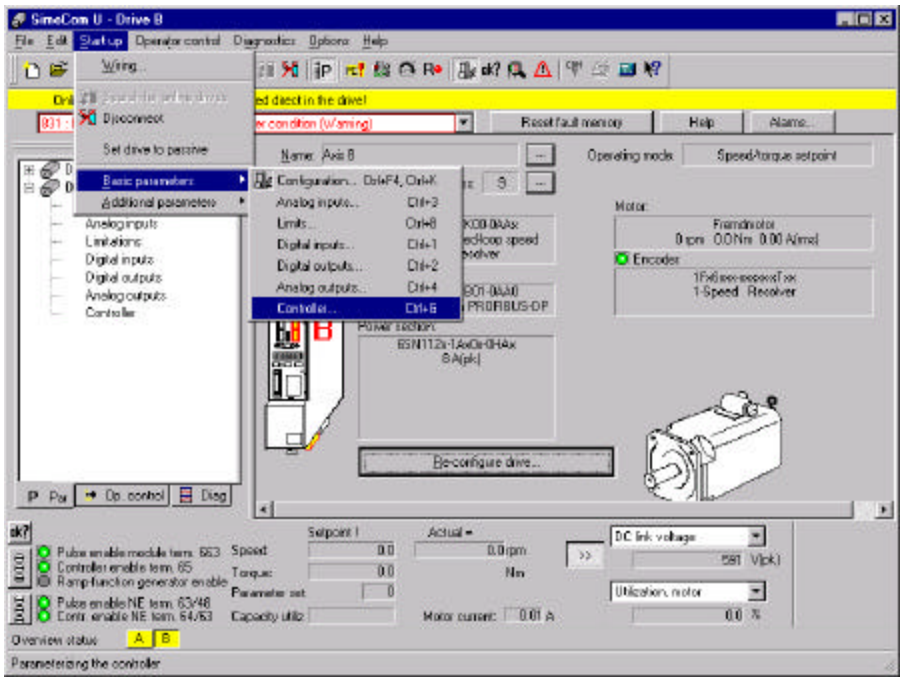
$$K_v = \frac{Velocity}{Following\ error}\left[\frac{1000}{\min}\right]\ or\ \left[16.6\frac{1}{s}\right]$$

Examples:

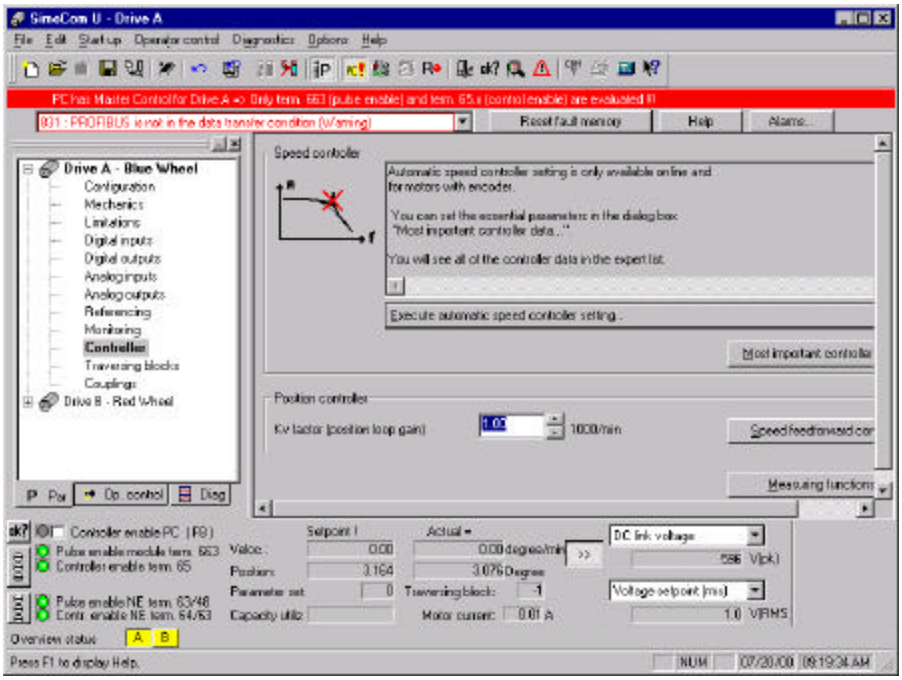
Kv factor (P0200:8)	**Description**
= 0.5	at v = 1 m/min, an s of 2 mm is obtained
= 1	at v = 1 m/min, an s of 1 mm is obtained
= 2	at v = 1 m/min, an s of 0.5 mm is obtained

The actual control loop gain of the complete position control loop is influenced by time constants as well as backlash and spring elements of the control loop.

➢ To set the K_v factor open “Start up/Basic parameters/Controller”



- Change the Kv factor into the calculated value



4.6 Setting of the drive-functions

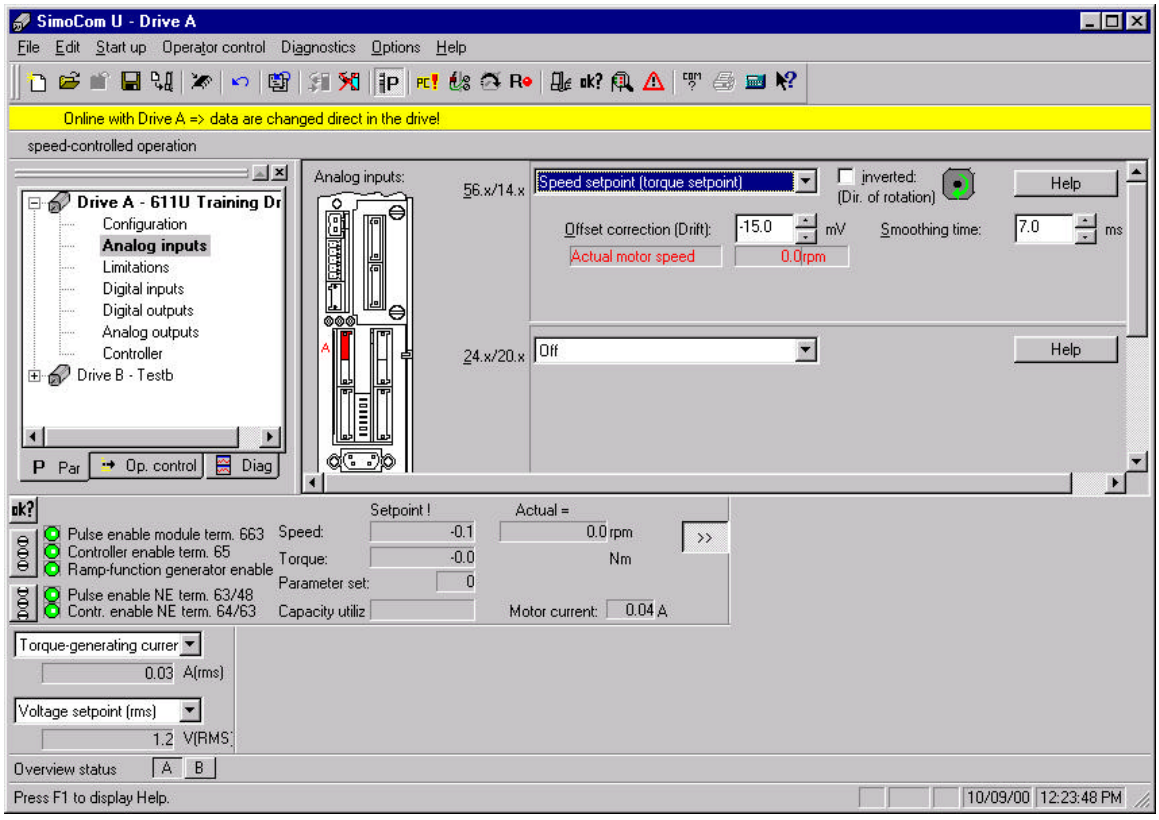
For detailed information on commissioning the functions of the drive see SIMODRIVE 611 universal Function Description chapter 6.

Drive Parameterization Examples:

Analog Inputs

Settings for analog and digital input / output can be used easily completed by using the parameter menu in the Simocon U program as illustrated in Fig. 4.6.1. The following section will cover setting up the analog input. Similar parameter functions can be addressed by the selecting the function in the parameter mode and adjusting the values as seen in this section.

Fig. 4.6.1

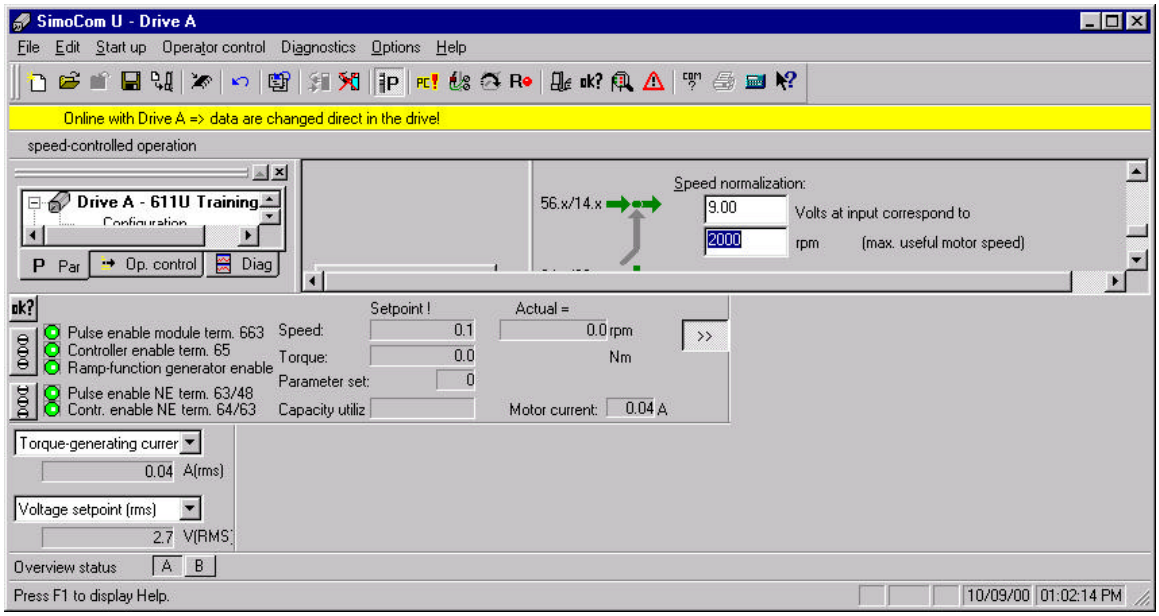


1. Highlight the parameter menu on the left portion of the screen and select the Analog Inputs path. Select Speed Setpoint (Torque Setpoint) for Analog input 56 x/14.

2. Limit your maximum motor speed and voltage input in “Speed Normalization”(See fig. 4.6.2). Set analog input 56x/14 to 0 volts. Set terminal 663 and terminal 65 high-drive.

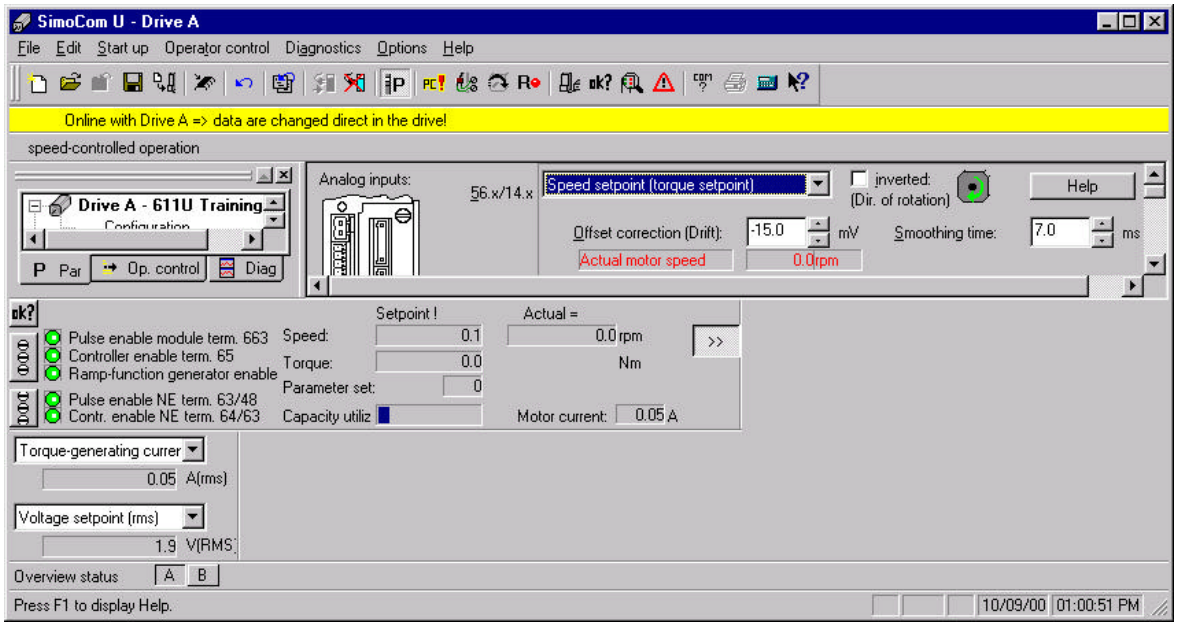
   Warning! *Drive is enabled and shaft may turn.*

Fig. 4.6.2



3. Adjust for any drift in shaft rotation by adding offset adjustment as highlighted in fig. 4.6.3 Smoothing time in milliseconds can be entered to the left of the “Offset Correction”.

Fig. 4.6.3

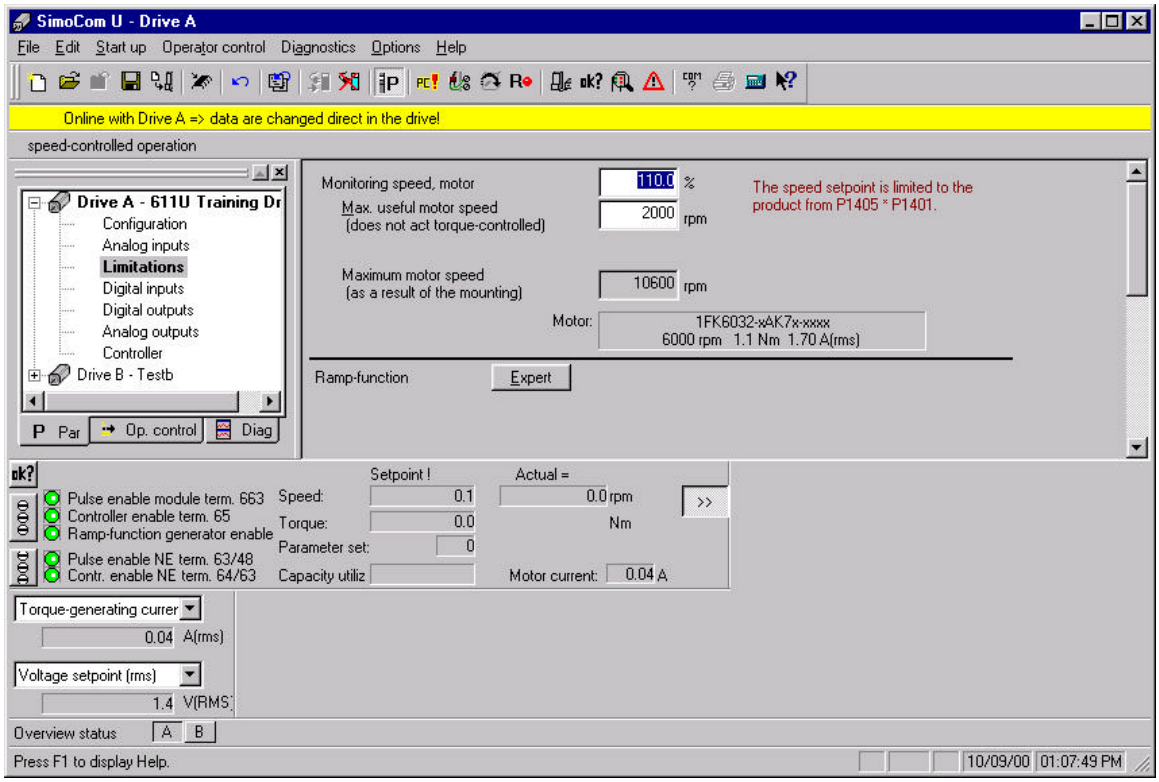


3. Adjust the speed by the applying voltage to Analog input 56x/14. You may notice that the speed in actual value is 10% > than in Speed Normalization setting. This is due to the limitations settings. This will be covered in the next section.

Adjusting Limitations

Speed limitations and Ramp Function generator functions can be set by selecting “Limitations” in the Parameter Menu as seen in Fig. 4.6.4

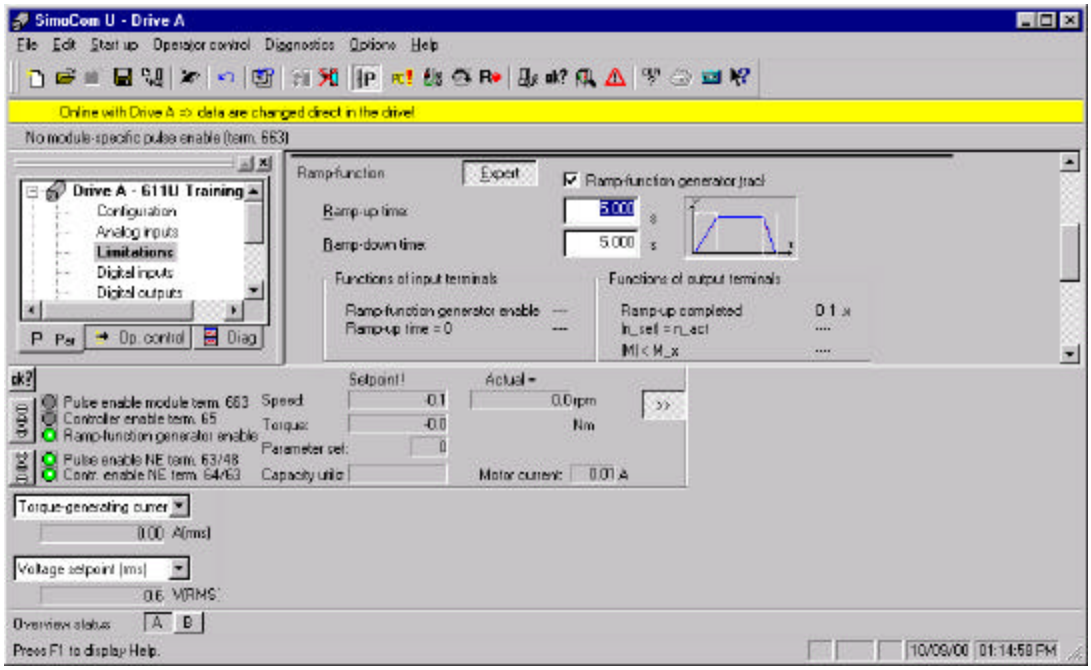
Fig 4.6.4



1. Set motoring speed limit in the selected slot as 100% for example (See Fig. 4.6.4). Notice that the motor speed is set to the RPMs that were selected in Fig 4.6.2. Ramp-Function Generator can be accessed by using the Expert button underneath the maximum speed settings addressed in the previous settings. ***Click on the “Expert” button for the next step.***

2. Set Ramp time as in Figure 4.6.5 below. Choose a value that will best suit your application.

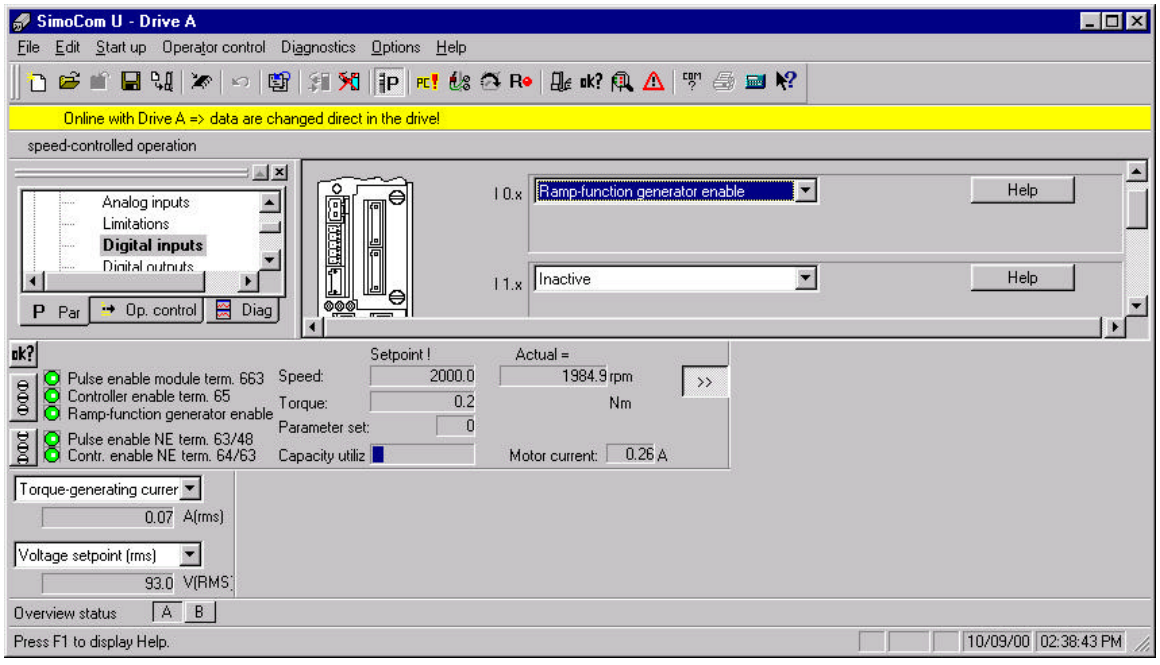
Fig 4.6.5



Setting Digital Inputs

Digital Input are accessible in the parameter menu by clicking on Digital Inputs. Then the inputs I 0X through I 3X are selected and assigned using pull-down menu. The example in Fig 4.6.6 shows the RFG selected as an input for 10X. Choose values that will be useful for you application.

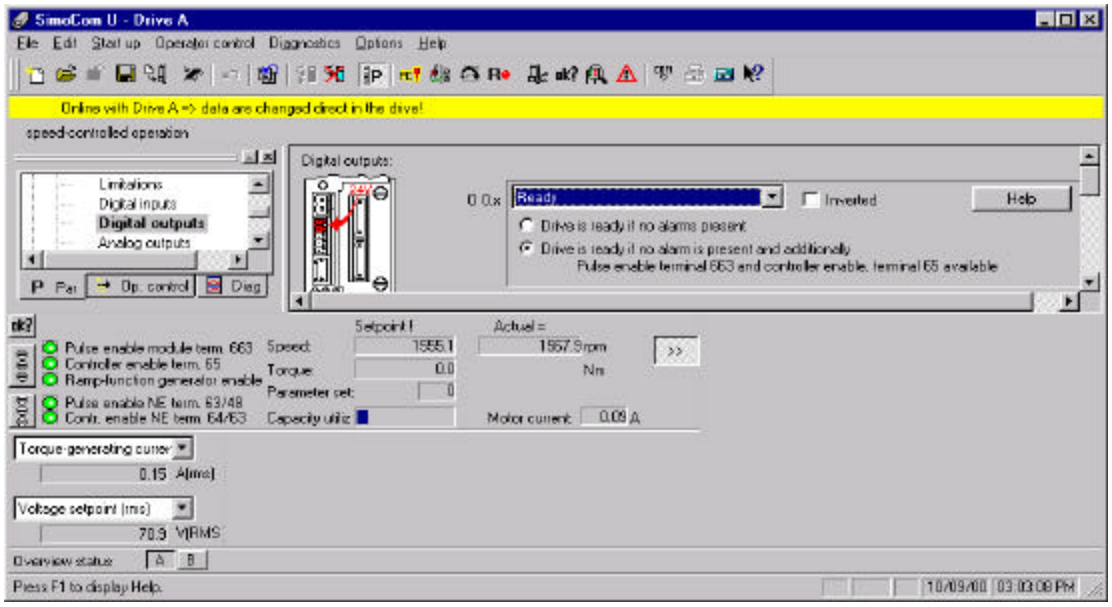
Fig 4.6.6



Setting Digital Outputs

Digital Outputs are configured similar to Digital Inputs with pull-down menus. This function is available in the parameter menu. Drive "Ready" is selected in Fig 4.6.7 for Digital Output O.0x. Conditions for this state are further defined underneath the pull-down menu for this condition.

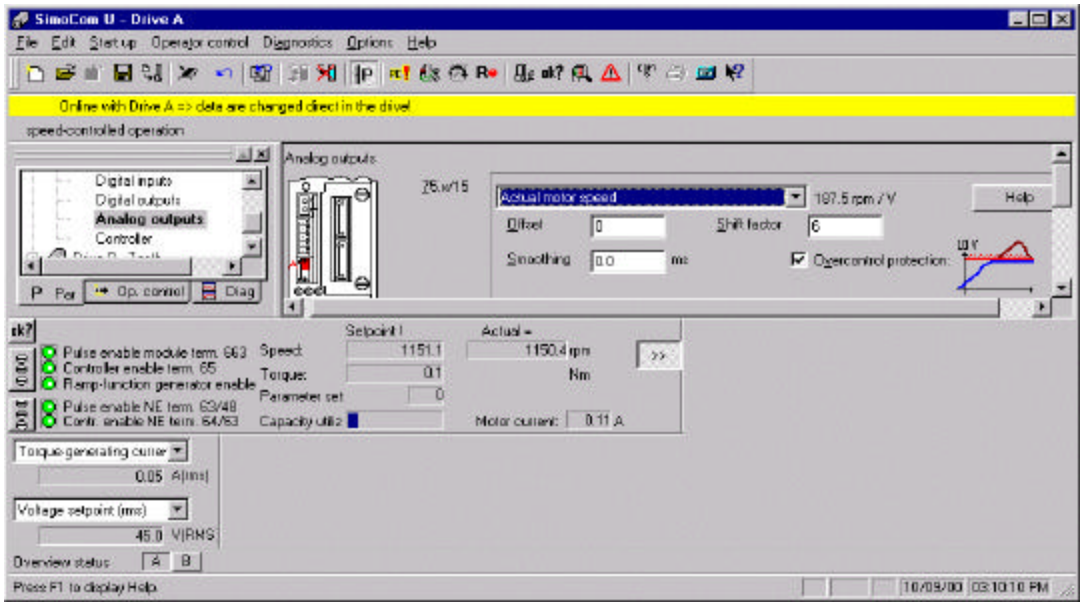
Fig 4.6.7



Analog Outputs

Analog Outputs are configured similar to the analog inputs mentioned in Section 3. There is offset adjustment and smoothing time available. Notice that the value selected for 75X/15 in Fig 4.6.8 is scaled to the value set in the normalizing screen in the Analog Input setup.

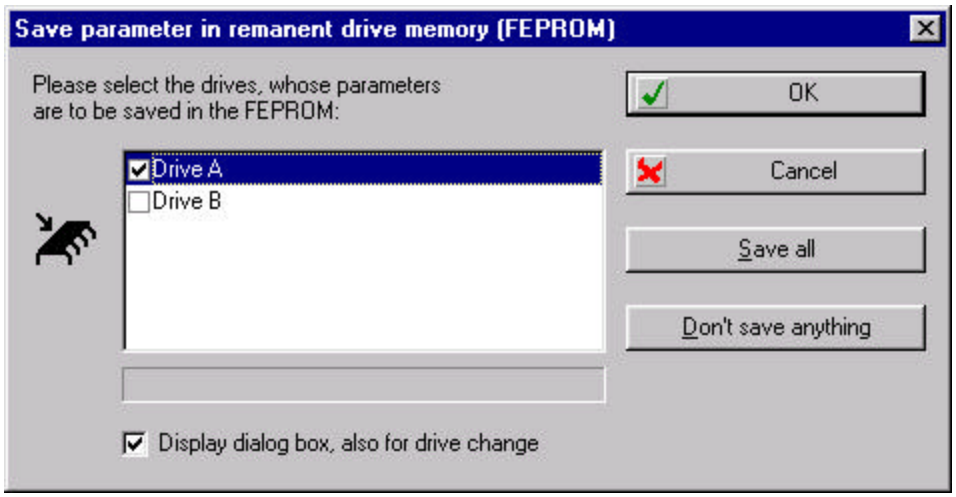
Fig 4.6.8



Save Settings in FEPROM

Parameter changes in Simocon U are not automatically saved in the 611U's memory. The drive settings must be saved in FEPROM if desired. Complete this path to save parameter changes in the drive, File→Save in drive→(Choose Drive A or Drive B→ OK.

Fig 4.6.9



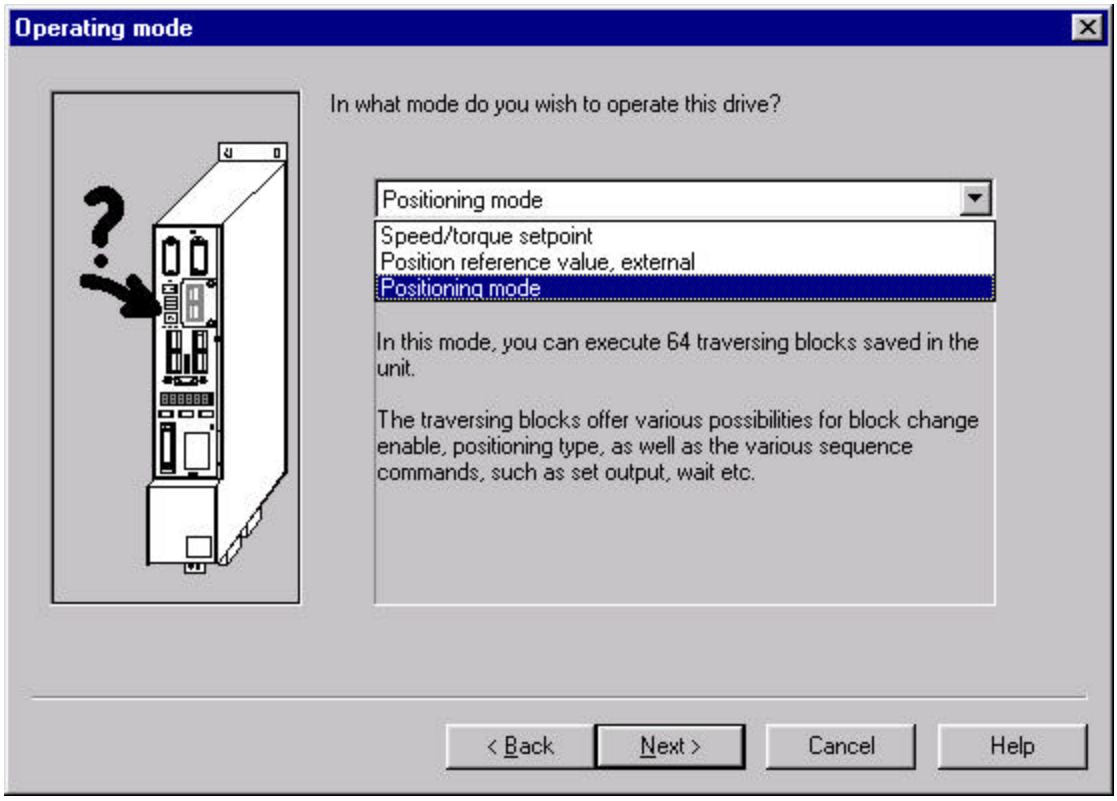
Positioning Control

In this next section, we will configure the 611U for Positioning control and set-up and test a traversing block program. The first step is drive configuration. Some of the preceding figures will show an off-line view. This was done to better illustrate the exercise.

Configure the 611U for Position Control

With the drive online and using the parameter menu as in the "First Start Up with SimoCom U Section", reconfigure the drive as before with the exception of choosing Positioning Mode.

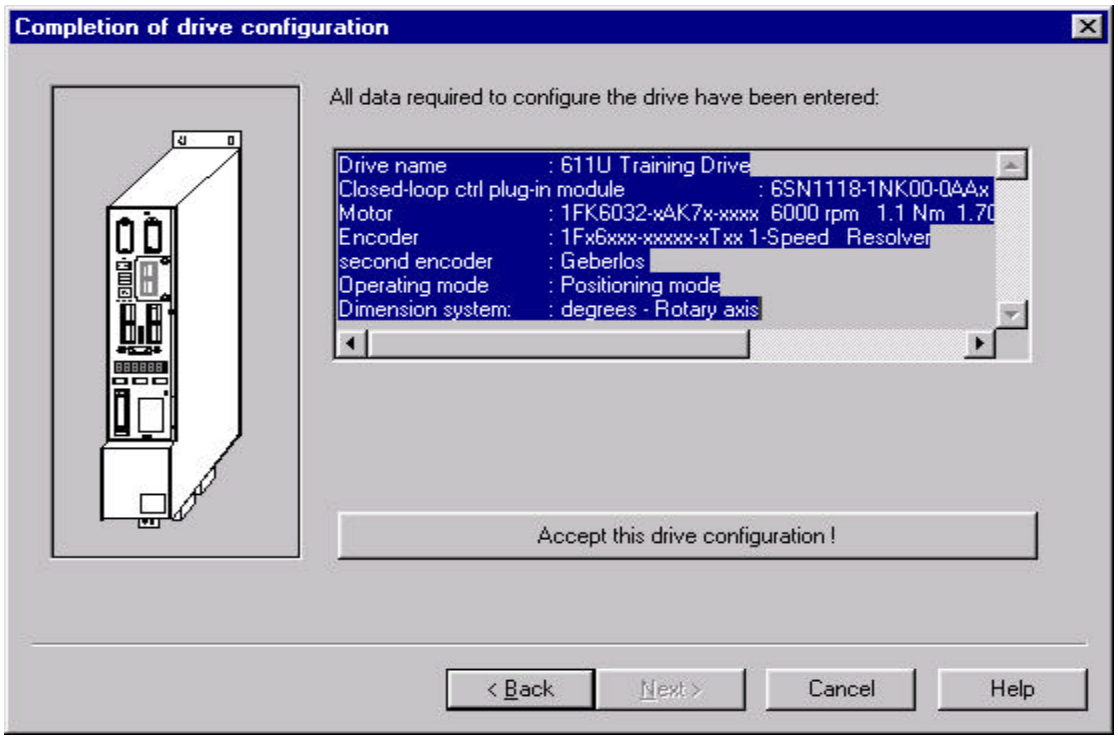
Fig 4.6.10



Accepting configuration Changes

Accept and verify the configuration. It should look the similar to Fig 4.6.11. Your 611U and Encoder device may be different than below, but Positioning Mode and Degrees-Rotary axis should be selected.

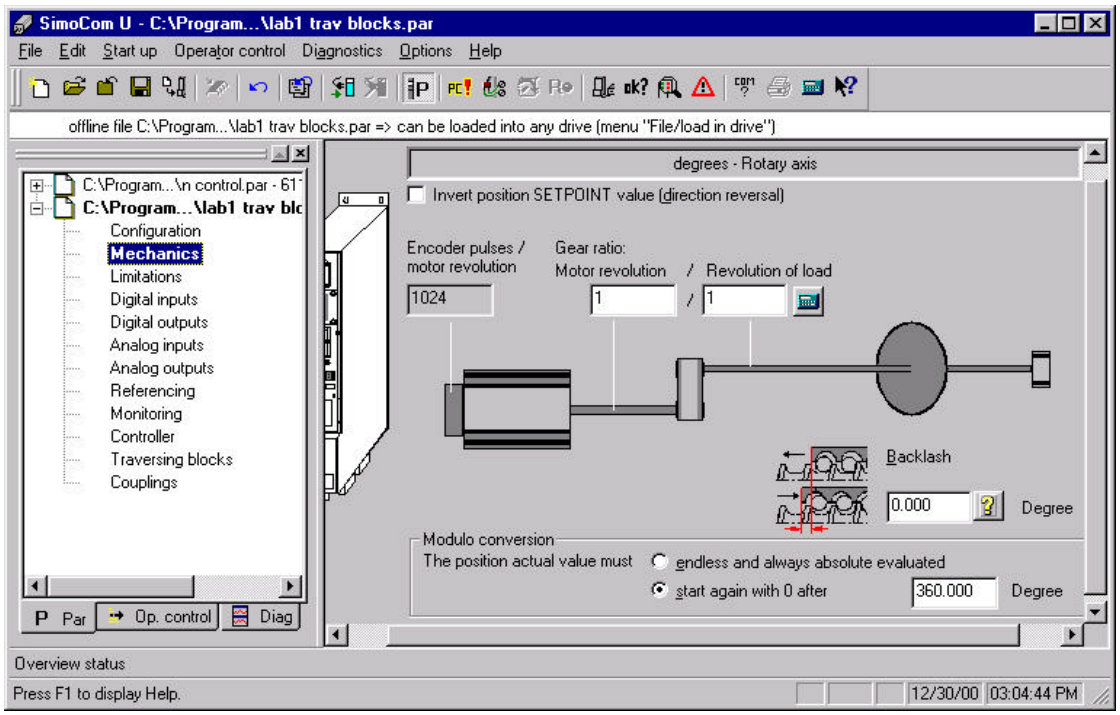
Fig 4.6.11



Mechanical Settings

The next setting in Simocon U needed is the Mechanical Settings. This block will confirm that the Rotary Axis has been selected, Gear Box ratio, and Pulse Encoder PPR is correct. Select Modulo conversion as selected in Fig 4.6.12, with 360 Degrees selected and start again with 0 after 360 degrees selected. This is for experimenting only and specific applications will require different settings if applicable. See Fig. 8.2 for more information on Mechanical Settings.

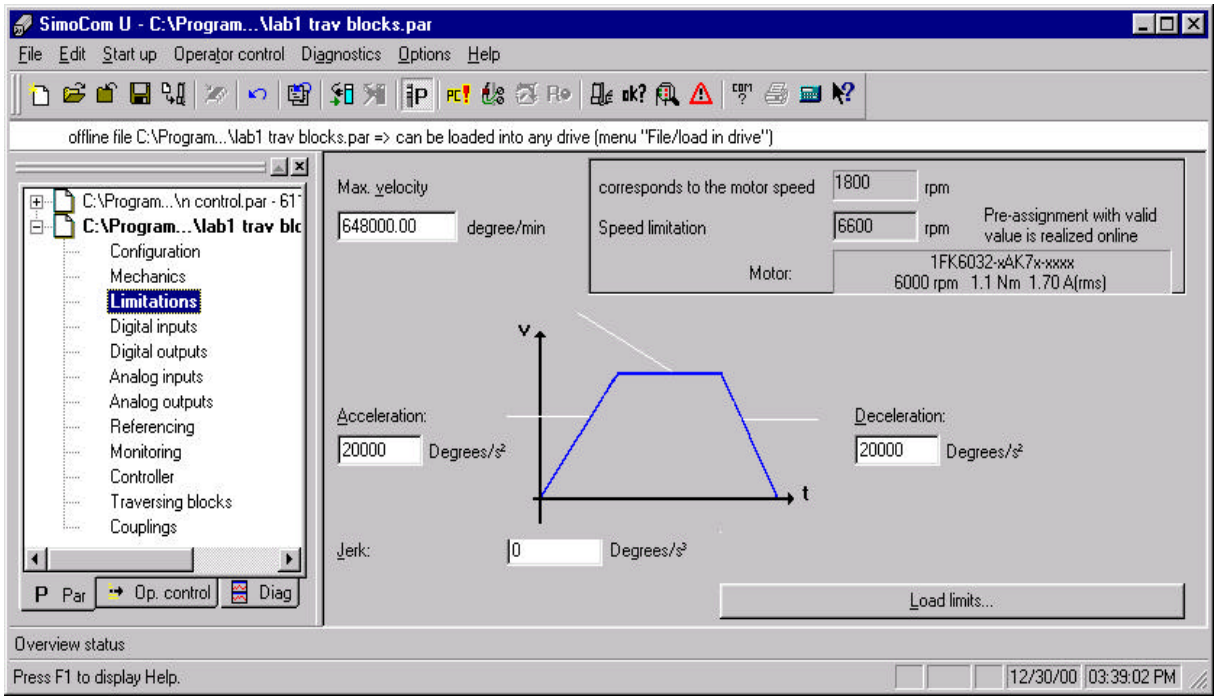
Fig 4..6.12



Limitations Menu

This block is different than the Speed Controller Set-Up. Set the maximum velocity for Max velocity = Max RPM X 360 Degrees. 64,800 for our example. Set Acceleration and Deceleration rates for the experiment as seen below (Degrees/S^2).

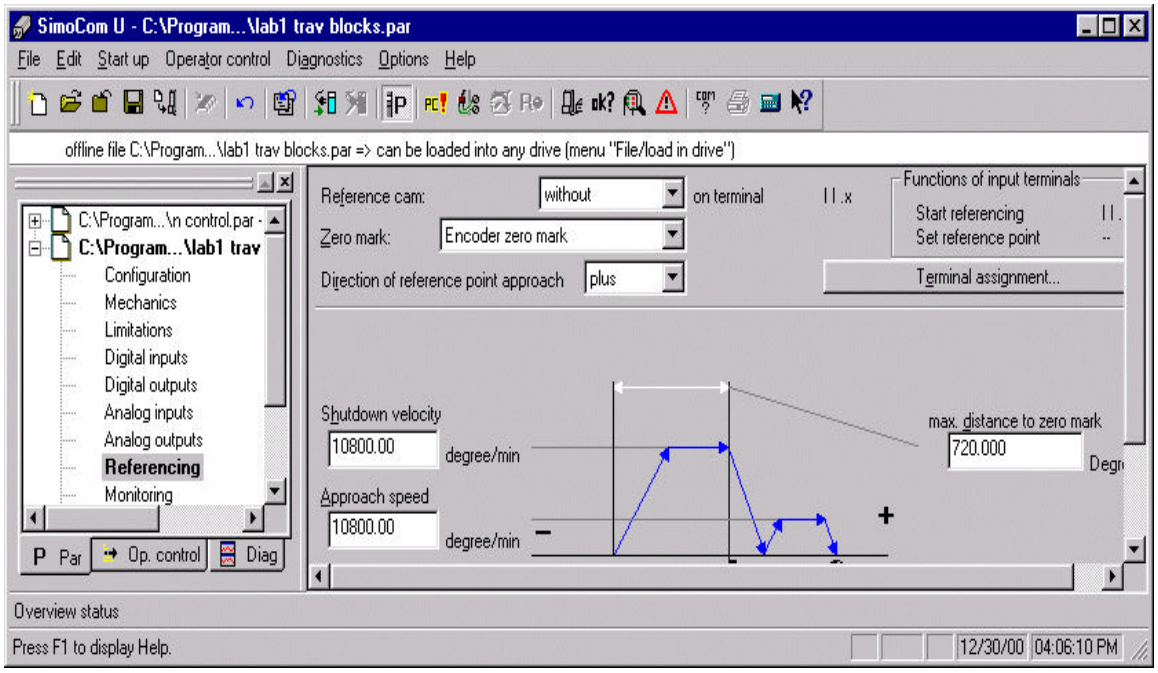
Fig 4.6.13



Reference Section

Set Reference Cam to “Without” and Zero Mark to “Encoder Zero Mark” as seen below.

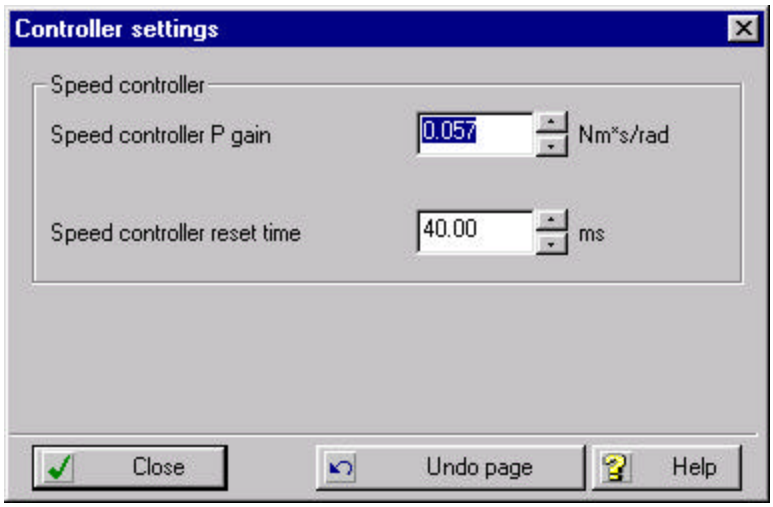
Fig 4.6.14



Speed Controller Optimization

Execute the Speed Controller as we have before in the previous section. Don’t forget to save new settings to FEPROM and note settings.

Fig. 4.6.15



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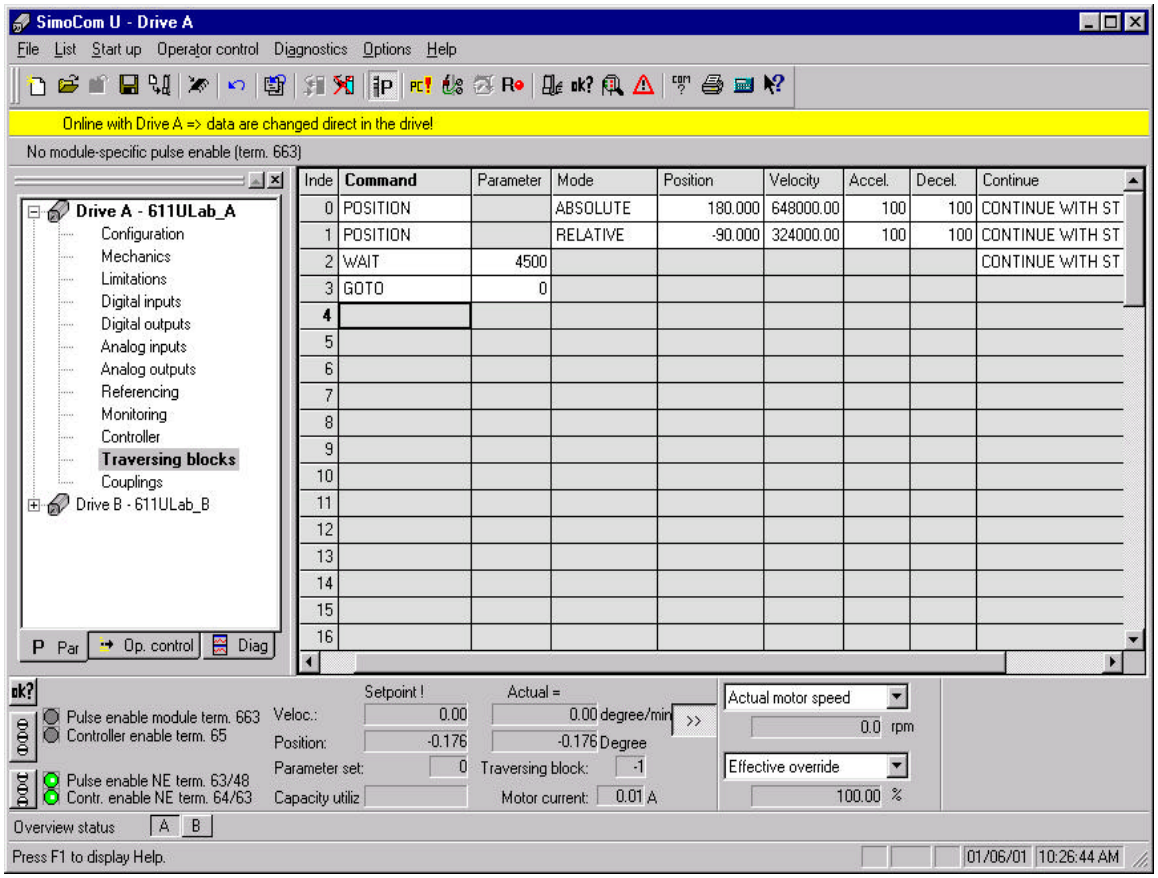
Traversing Block Program

Go to the Traversing Block program in the on screen parameter menu and write a traversing block program as follows:

Drive to abs. position 180° with max. velocity
Drive relative - 90° with 50% velocity
Wait for 4.5 sec
Drive to abs. position 0° with 100% velocity
Start all over again

See Figure 4.6.16 below for reference. The Command and other text sections have pull down menus for text commands. And the values for numerical reference such as Position are changeable by writing in values.

Fig. 4.6.16



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Digital Inputs for Traversing Exercise

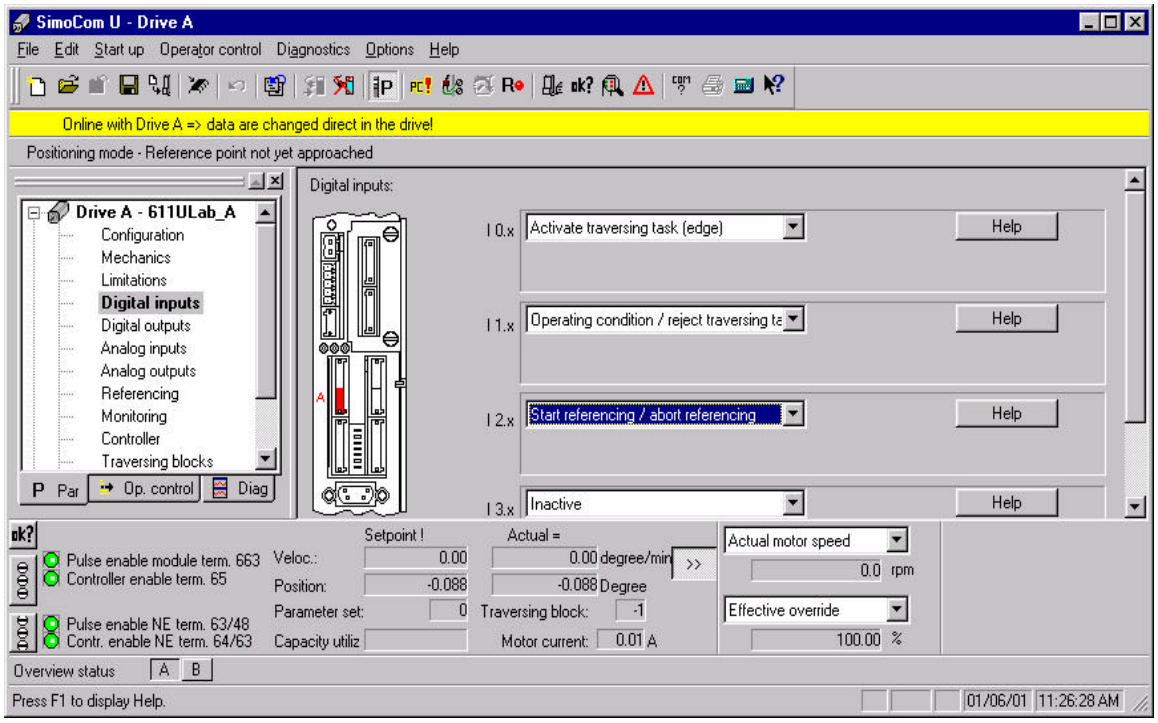
Go to Digital Inputs in the parameter menu and set the digital input for the traversing exercise.

Set the digital inputs as follows:

I0.X to "activate traversing task (edge)"
I1.X to "operating condition / reject traversing task"
I2.X to "Start referencing / abort referencing"
I3.X to "Inactive"

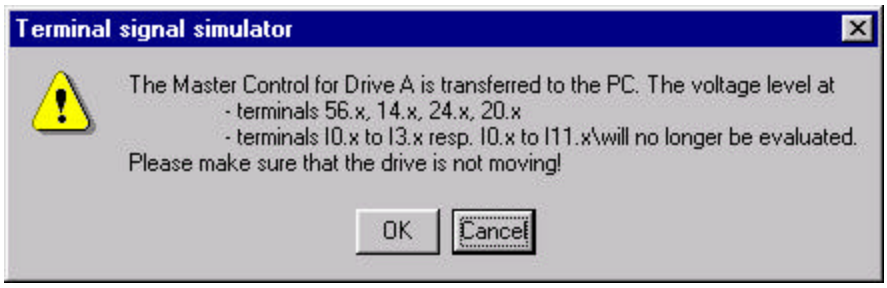
See Figure 4.6.17 below for exact settings.

Fig. 4.6.17



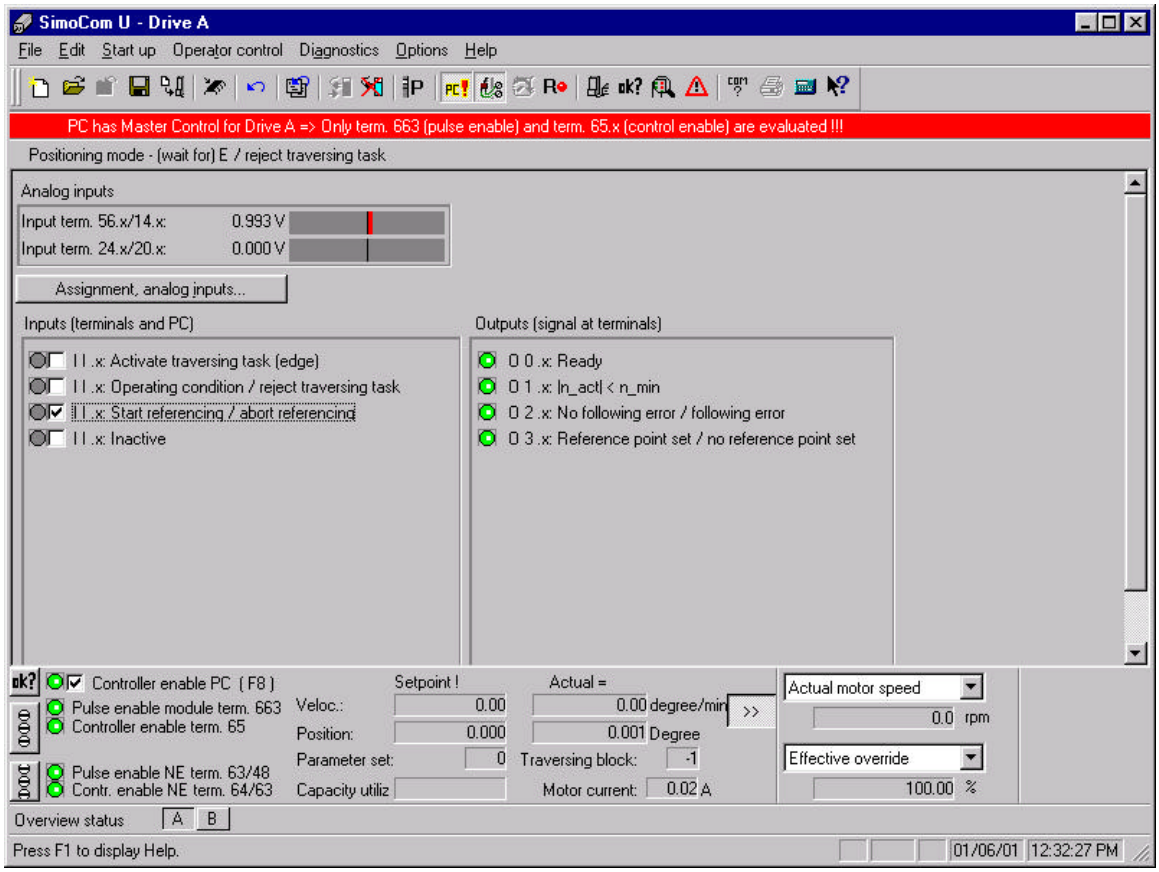
Hardwired connections to the above digital input can be used or PC control and the terminal simulator can be used. We will be using PC Control and the terminal simulator for this exercise. Activate the Terminal Simulator icon (It is to the right of the **PC!** icon). You will get a message box as below. Acknowledge the message box and then the settings will go to PC control with terminal simulation. See Fig. 4.6.18 for more information about Terminal Simulation. Make sure that the drive is not operating as the control is switched in this manner.

Fig 4.6.18



Now go the Terminal Simulator menu by clicking on the Icon or switching to Operator Control, and then choosing Terminal Simulator below the file block menu to the left side of the screen. We will first reference the shaft of the motor to absolute position. Select the Digital Input assigned to Start Referencing / Abort Referencing as shown in the figure below. Make sure that Controller Enable PC is active (as seen in fig 4.6.19 on bottom left).

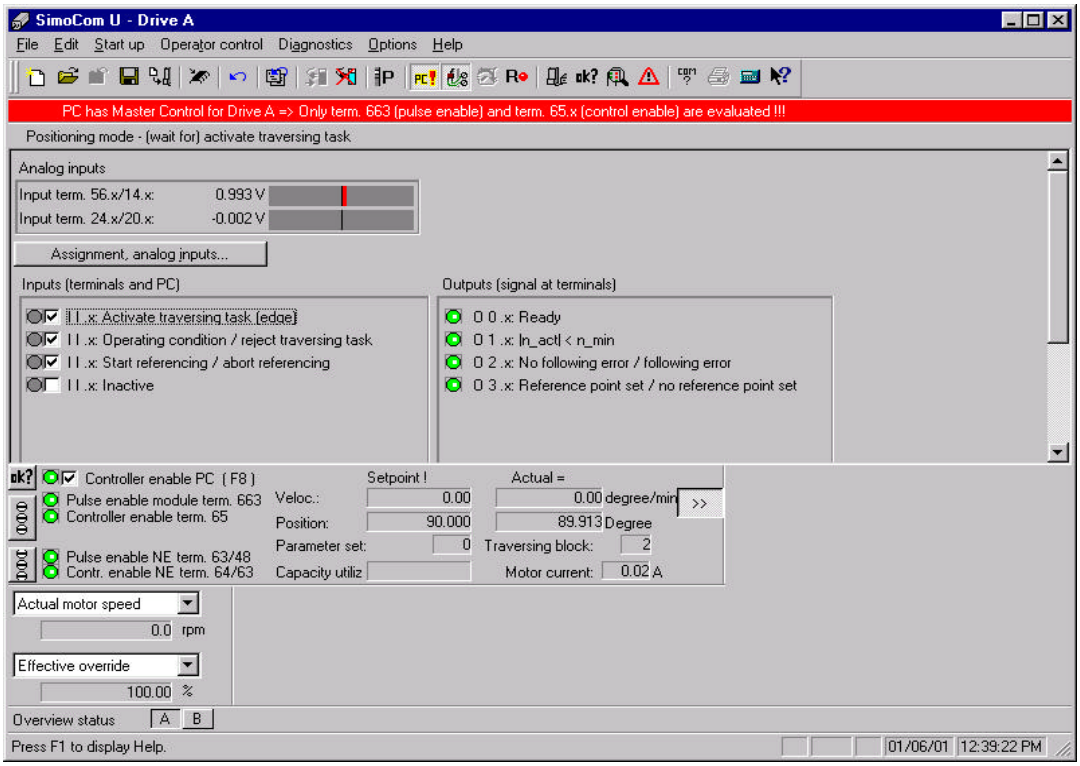
Fig 4.6.19



The motor shaft will go to reference position and then we can proceed in this order:

1. **Select "Operating Condition"**
2. **Select "ActivateTraversing Task (Edge)"**
3. **Observe that the Shaft rotates according to the traversing programmed**

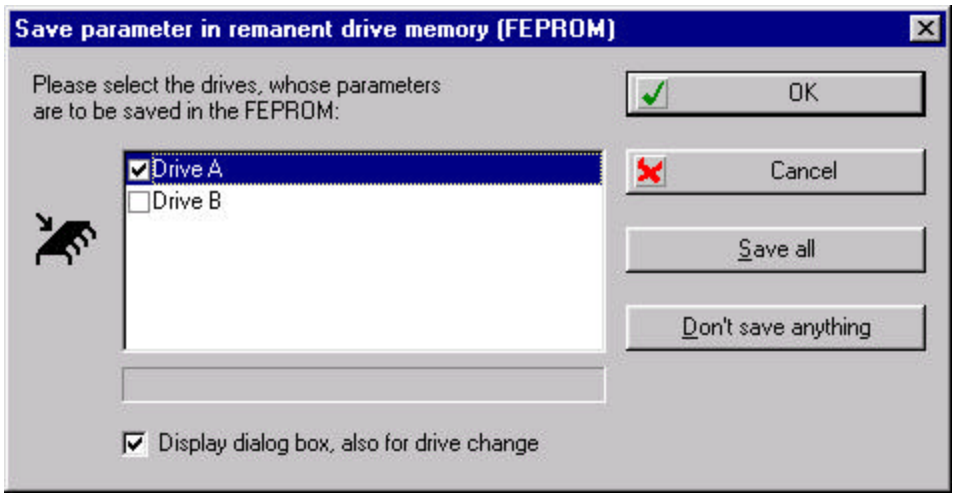
Fig 4.6.20



Saving Settings to FEPROM

Parameter changes in Simocon U are not automatically saved in the 611U's memory. The drive settings must be saved in FEPROM if desired. Complete this path to save parameter changes in the drive, File→Save in drive→(Choose Drive A or Drive B→ OK.

Fig 4.6.21



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Terminology Glossary
Section 5 Table of Contents:

5.1 List of abbreviations

5.1 List of abbreviations

AA	Analog output
ABS	Absolute
ADC	Analog–Digital Converter
ADU	Analog–Digital Converter
IM	Induction motor without encoder (IM operation)
ARM	Rotating induction motor
ASCII	American Standard Code for Information Interchange:
OC	Operating condition
COM	Communications Module
CPU	Central Processing Unit
CTS	Clear To Send: Ready to send signal for a serial data interface
DAC	Digital–Analog Converter
DAU	Digital–Analog Converter
DP	Distributed periphery
DPC31	DP controller with integrated 8031 core
DPMC1, DPMC2	DP Master Class 1 or Class 2
DPR	Dual-port RAM
DRAM	Dynamic RAM
DRF	Differential Resolver Function:
DSP	Digital signal processor
DSR	Data Send Ready
ESDS	Boards and modules which can be destroyed by electrostatic discharge
EMC	Electromagnetic compatibility
EMF	Electromotive Force
EnDat	Encoder Data Interface: bi–directional synchronous serial interface
I/R	Infeed/regenerative feedback module

EPROM	Program memory with permanent program
FEPROM	Flash-EPROM: Read and write memory
FFT	Fast Fourier Transformation
FG	Function Generator
FIPO	Fine interpolator
FR+	Enable voltage +24 V
FR–	Reference for enable voltage
GC	Global Control Telegram (broadcast telegram)
GSD	Master device file: defines the features of a DP slave
HEX	Abbreviation for hexadecimal number
RFG	Ramp–function generator
MSD	Main spindle drive
HW	Hardware
HWE	Hardware limit switch
I	Input: Input
IBN	Start–up (commissioning)
Id	Field–generating current
IF	Pulse enable
IND	Sub–index, sub–parameter number, array index: Part of a PKW
IPO	Interpolator
Iq	Torque–generating current
	This feature is presently not available
KL	Terminal
Kv	Position loop gain (Kv factor)
LED	Light Emitting Diode LED display
LSB	Least Significant Bit
MLFB	Machine–Readable Product Designation: Order No.
MPI	Multi–Point Interface Multi–point capable serial interface
MSB	Most Significant Bit

MSCY_C1	Master Slave Cycle Class 1: Cyclic communication between master (class 1) and slave
MSR	Measuring system grid: smallest positioning unit
NC	Numerical Control Numerical control
NE	Supply infeed
nact	Speed actual value
nset	Speed setpoint
O	Output Output
OLP	Optical Link Plug Bus connector for fiber–optic cable
P	Parameter
PBM	Pulse–width modulation
PCMCIA	Personal Computer Memory Card International Association
PEH	Position reached and stop
PELV	Protective Extra Low Voltage Functional extra–low voltage
PG	Programmer
PKE	Parameter identification: Part of a PKW
PKW	Parameter identification value: Parameterization section of a PPO
PLL	Phase Locked Loop: Block for clok–synchronous operation
PO	POWER ON
PosAnw	Position selection
PosZsw	Positioning status word
PPO	Parameter process data object: Cyclic data telegram when transferring data with the PROFIBUS–DP and ”variable–speed drive” profile”
PRBS	Pseudo Random Binary Signal: white noise
PROFIBUS	Process Field Bus: serial data bus
PTP	Point to Point
PWE	Parameter value: Part of a PKW
PZD	Process data: Process data part of a PPO
RAM	Program memory which can be read and written into
REL	Relative

RF	Controller enable
RO	Read Only: can only be read
SF	Shift factor
SLM	Linear synchronous motor
SPC3	Siemens PROFIBUS Controller 3
PLC	Programmable logic control
SRM	Rotating synchronous motor
SS	Interface
SSI	Synchronous Serial Interface
STS	Gating unit
STW	Control word: Part of a PZD
SW	Software
SWE	Software limit switch
UE	Uncontrolled infeed
VDI	Verein Deutscher Ingenieure (Association of German Engineers)
VPM	VP Module, Module to limit the DC link voltage when a fault occurs (VPM: voltage protection module)
Vpp	Voltage peak to peak
FD	Feed Drive
WSG	Angular encoder
WZM	Machine tool
xact	Position actual value
xset	Position reference value
ZK	DC link
ZSW	Status word: Part of a PZD

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Troubleshooting & FAQ
Section 6 Table of Contents:

6.1 Overview of faults and warnings

Type		Range	Description
Alarms	Fault **Have the numbers < 800** **and are displayed with "E–xxx"**	1 ... 799	**When faults occur** • The segment display automatically changes over • The fault number is output flashing e.g. E–A008 —> Error 8 from drive A E–b714 —> Error 714 from drive B • An appropriate stop response is initiated **Characteristics** • The display is in the sequence in which the faults and alarms occurred • If more faults occur, then the first fault and all additional faults can be displayed using the PLUS key (refer to Fig. ??) • Faults without/with supplementary information – Without supplementary information The cause of the fault is only defined by the fault number. – With supplementary information The cause of the fault is defined using the fault number and supplementary information. For the display unit, it changes over between the fault (output with E ...) and the supplementary information (only a value is output). • You can select the parameterizing mode from the fault display using the MINUS key • The faults have a higher priority than the warnings **Removing faults** • Remove the fault cause • Acknowledge the fault (this is specified for each fault)
	Warning **have the numbers ≥ 800** **and are displayed with "E xxx"**	800 ... 927	**When warnings occur** • the segment display automatically changes over • the warning number is output flashing e.g. E A805 —> Warning 805 from drive A E b810 —> Warning 810 from drive B **Characteristics** • If several warnings are present, there is no inter–relationship between the time which they occurred and the display • Only one warning is displayed • The warning with the lowest number is displayed • You can go into the parameterizing mode using the MINUS key **Removing warnings** • Warnings are self–acknowledging, i.e. they automatically reset themselves when the condition is no longer fulfilled

Table 6-1 Overview of faults and warnings

Acknowledgment

In the list of faults and warnings (refer to Section 6.1.4), with each fault, it is specified how it must be acknowledged after the cause has been removed.

Acknowledging with

Faults, which are acknowledged with POWER ON, can be alternatively faults acknowledged as follows: POWER ON

1. Execute POWER ON
   (power–down/power–up the “SIMODRIVE 611 universal”)
2. Depress the POWER ON–RESET reset button on the control board front panel
3. POWER ON–RESET using the SimoCom U tool

The processor runs–up again, all of the faults are acknowledged, and the fault buffer is re–initialized.

Acknowledge faults RESET FAULT

Faults, with are acknowledged with RESET FAULT MEMORY can be with alternatively acknowledged as follows: MEMORY

Important!

Prerequisites for acknowledging:
Controller enable, terminal 65.x has been withdrawn

1. Execute POWER ON acknowledgment
   In addition to the POWER ON faults, all of the faults, which are acknowledged with RESET FAULT MEMORY, are acknowledged.
2. Set the input terminal with the ”reset fault memory function” to ”1”
3. Press the P key on the display– and operator control unit
4. Using PROFIBUS–DP: STW1.7 (reset fault memory) to “1”
5. Set terminal R on the NE module to ”1”.

   When this terminal is energized, ”reset fault memory” is initiated for all of the control boards in the complete drive group.
6. For the SimoCom U tool in the “alarm report” dialog box, by pressing the ”reset fault memory” button”

Stop responses

For each fault and warning, the stop response and the effect it has is specified under ”stop” in the list of faults and warnings (refer to Section 6.1.4).

Stop	Stop via...	Effect
STOP I	Internal pulse inhibit	• Pulses immediately canceled. • The drive coasts down.
STOP II	Internal controller inhibit	• Speed–controlled operation – Drive is braked along the down ramp if n_{set} = 0 is immediately entered. – If the speed actual value falls below the value in P1403 (shutdown speed, pulse cancellation), or if the time in P1404 (timer stage, pulse cancellation) has expired, then the pulses are deleted. • Open–loop torque controlled operation – The drive is not actively braked. – If the speed actual value falls below the value in P1403 (shutdown speed, pulse cancellation), or if the time in P1404 (timer stage, pulse cancellation) has expired, then the pulses are deleted.
STOP III	n_{set} = 0	• The axis is braked closed–loop speed controlled with the maximum deceleration (P0104). • The drive remains closed–loop controlled.
STOP IV	Interpolator (P0104)	• The axis is braked, closed–loop position controlled the maximum deceleration (P0104). • The drive remains closed–loop controlled.
STOP V	Interpolator (P0104 • P0084:64)	• The axis is braked closed–loop position controlled with the program deceleration (P0104 • deceleration override in P0084:64). • The drive remains closed–loop controlled.
STOP VI	End of block	• Standstill after the end of block. • The drive remains closed–loop controlled.
STOP VII	None	• No effect. • Acknowledgment is not required. • This is a warning

Table 6-2 Stop responses and their effect

6.2 Displaying and handling faults and warnings

Displaying faults and warnings

When one or several faults or warnings occur, the segment display is automatically changed–over into the alarm mode. The faults and warnings are output flashing on the display unit. The following display possibilities are available:

Display example (flashing display)	Description
1. This is what it looks like if **a** fault has occurred (refer to Fig. 5-1).	
	• E: It involved a fault (code: 1 hyphen) • 1 hyphen: A fault is present • A: The fault is assigned to drive A • 608: Is the fault number
2. This is what it looks like, if **several** faults have occurred (refer to Fig.5-2).	
	• E: It involves several faults (code: 3 hyphens) • 3 hyphens: – Several faults are available – this is the first one which occurred • A: The fault is assigned to drive A • 131: Is the fault number
	**Note:** If several faults are present, each additional fault can be displayed by pressing the PLUS key.
	• E: It involves an additional fault (code: 2 hyphens) • 2 hyphens: – Several faults are available – This is an additional fault • A: The fault is assigned to drive A • 134: Is the fault number
3. This is what it looks like if a warning is present (refer to Fig.5-3).	
	• E: It involves warning (code: no hyphen) • A: The warning is assigned to drive A • 804: Is the warning number

Table 6-3 Displaying alarms on the display unit

Handling a fault

When a fault occurs, it can be handled using the MINUS and P keys as illustrated in the following diagram.

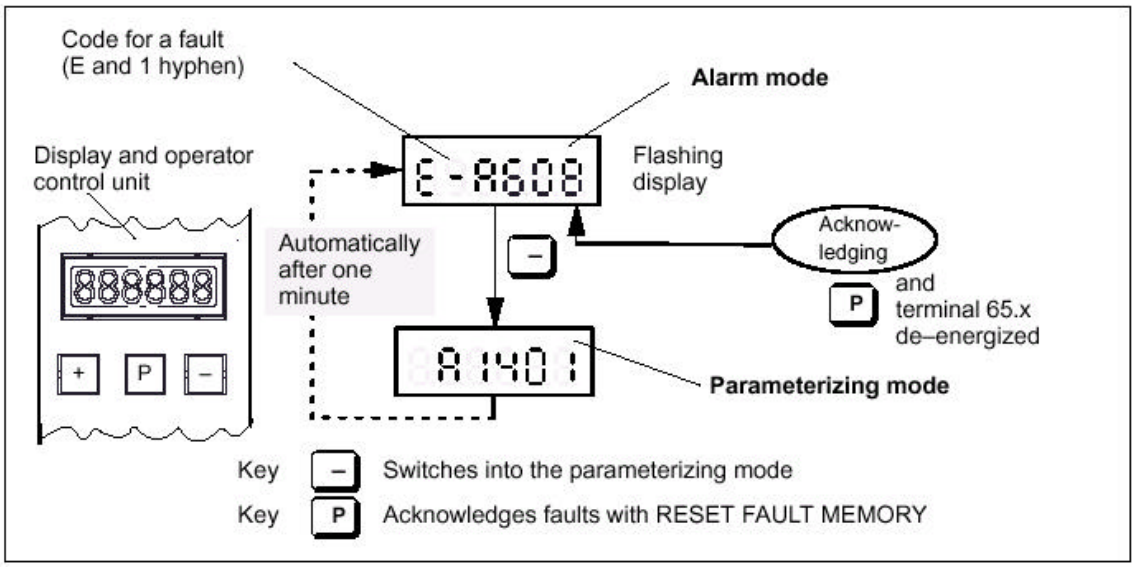

Fig. 6-1 Handling a fault

Handling several faults

When faults occur, they can be handled using the PLUS, MINUS and P keys as illustrated in the following diagram.

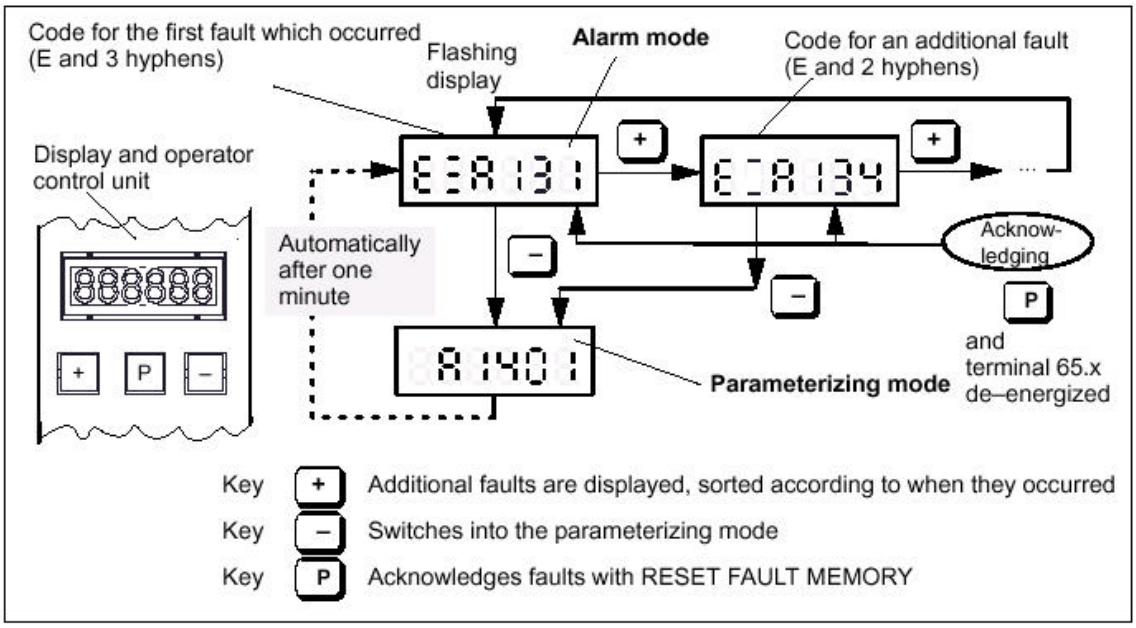

Fig. 6-2 Handling several faults

Handling a warning

When warnings occur, they can be handled using the MINUS as illustrated in the following diagram.

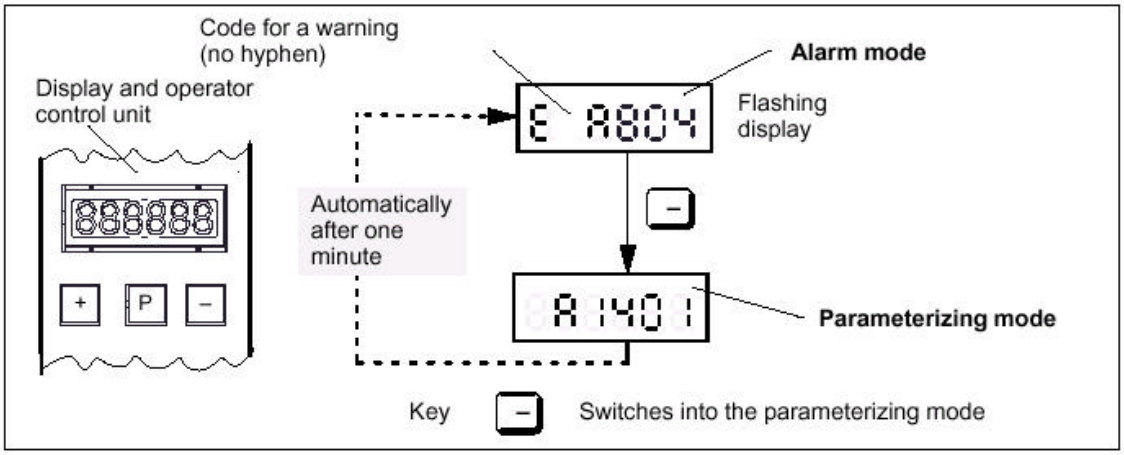

Fig. 6-3 Handling a warning

6.3 FAULT–LED on the front panel

LED display

There is a button with integrated LED on the “SIMODRIVE 611 universal” control module.

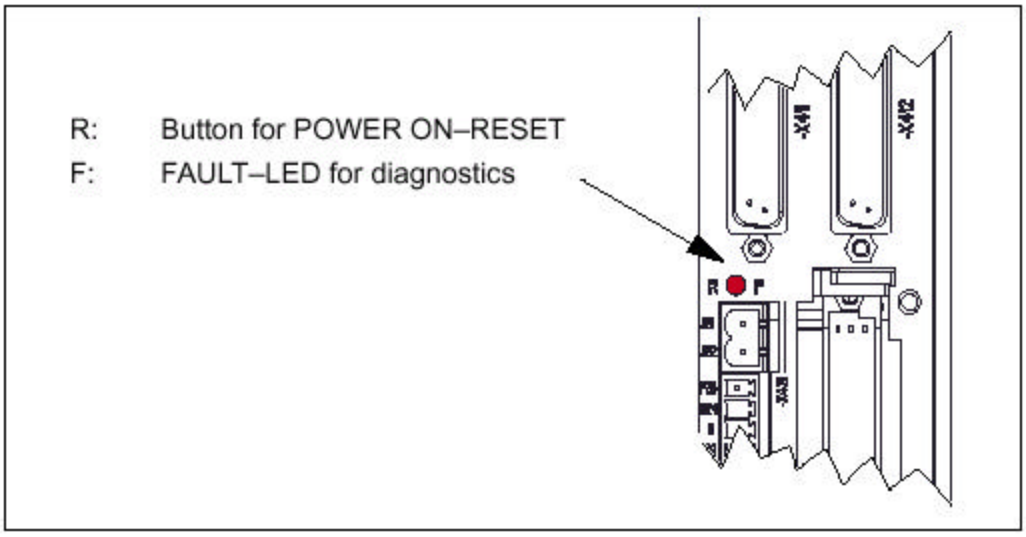

Fig. 5-4 FAULT–LED on the front panel of the control board

What does the FAULT–LED

If the FAULT–LED is lit (bright) on the front panel of the control board, this can be interpreted as follows:

If	then
the **FAULT–LED** on the control module front panel is **lit,**	• there is at least one fault (No.: < 800, the fault number is displayed on the display unit) • the control board is running–up (approx. 2 sec). After the system has successfully run–up, the LED goes dark. • the drive has to be commissioned for the first time • the memory module is not inserted, or incorrectly inserted on the control board • the control board is defective

Table 6-4 Significance of FAULT–LED

6.4 Error without displaying a number

Fault	**The operator control display is inactive after power on**
Cause	– Minimum of two phases missing (NE module)
	– Minimum of 2 incoming fuses have blown (NE module)
	– Defective electronics power supply in the NE module
	– The equipment bus connection (ribbon cable) from the NE module to the “SIMODRIVE 611 universal” control board is not inserted or is defective
	– Defective control board
Fault	**After controller enable, the motor is stationary for n_{set} _ 0**
Cause	– P1401:8 was set to zero
	– Power–on inhibit for PROFIBUS operation Remove the power–on inhibit by changing the signal at terminal 65.x from “high to low to high”, or the control bit STW1.0 (ON / OFF 1) or set bit 12 from 1012 to zero
Fault	**The motor moves slightly after the controller is enabled**
Cause	– Defective power module
Fault	**After the controller enable the motor rotates, max. 50 RPM at n_{set} > 50 RPM or the motor oscillates at n_{set} < 50 RPM**
Cause	– Incorrect motor phase sequence (interchange 2 phase connections)
	– Entered encoder pulse number too high
Fault	**The motor accelerates to a high speed after the controller has been enabled**
Cause	– Encoder pulse number too small
	– Open–loop torque controlled operation selected?
Fault	**“– – – – – –” is output on the display unit**
Cause	– There is no drive firmware on the memory module – Remedy: Refer to Fault 001

6.5 List of faults and warnings

001 The drive does not have firmware

Cause: No drive firmware on the memory module.

Remedy: – Load the drive firmware via SimoCom U
– Insert the memory module with firmware

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

002 Computation time overflow. Suppl. info: \%X

Cause: The computation time of the drive processor is no longer sufficient for the selected functions in the specified cycle times.
Supplementary information: only for siemens–internal error diagnostics

Remedy: Disable functions which take up a lot of computation time, e.g.: – Variable signaling function (P1620) – Trace function – Start–up with FFT or analyzing the step response – speed feedforward control (P0203) – Min/Max memory (P1650.0) – DAC output (max. 1 channel) Increase cycle times: – Current controller cycle (P1000) – Speed controller cycle (P1001) – Position controller cycle (P1009) – Interpolation cycle (P1010)

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

003 NMI due to watchdog. Suppl. info: \%X

Cause: The watchdog timer on the control module has expired. The cause is a hardware fault in the time basis on the control module.
Supplementary information: only for siemens–internal error diagnostics

Remedy: Replace closed–loop control module Acknowledge / Stop POWER ON /

STOP II (SRM) STOP I (ARM)

004 Stack overflow. Suppl. info: \%X

Cause: The limits of the internal processor hardware stack or the software stack in the data memory have been violated. The cause is probably a hardware fault on the control module.
Supplementary information: only for siemens–internal error diagnostics

Remedy: – power down / power up drive module – Replace control module

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

005 Illegal Opcode, Trace, SWI, NMI (DSP). Suppl. info: \%X

Cause: The processor has detected an illegal command in the program memory. Supplementary information: only for siemens–internal error diagnostics

Remedy: Replace closed–loop control module Acknowledge / Stop POWER ON /

STOP II (SRM) STOP I (ARM)

006 Checksum test error. Suppl. info: \%X

Cause: During the continuous check of the checksum in the program / data memory, a difference was identified between the reference and actual checksum. The cause is probably a hardware fault on the control module.
Supplementary information: only for siemens–internal error diagnostics

Remedy: Replace closed–loop control module Acknowledge / Stop POWER ON /

STOP II (SRM) STOP I (ARM)

007 Error when initializing. Supplementary info: \%X

Cause: An error occurred when loading the firmware from the memory module.

Cause: Data transfer error, FEPROM memory cell defective
Supplementary information: only for siemens–internal error diagnostics

Remedy: Execute RESET or POWER ON.
If there is still a problem after several attempts, then the memory module must be replaced. If this is also not successful, then the control module is defective and must be replaced.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

020 NMI due to cycle failure

Cause: Basic cycle has failed.
Possible causes: EMC faults, hardware fault, control module

Remedy: – check the plug–in connections
– implement noise suppression measures (screening, check ground connections) – Replace control module

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

025 SSI interrupt

Cause: An illegal processor interrupt has occurred. An EMC fault or a hardware fault on the control module could be the reason.

Remedy: – check the plug–in connections – Replace control module

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

026 SCI interrupt

Cause: An illegal processor interrupt has occurred. An EMC fault or a hardware fault on the control module could be the reason.

Remedy: – check the plug–in connections – Replace control module

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

027 HOST interrupt

Cause: An illegal processor interrupt has occurred. An EMC fault or a hardware fault on the control module could be the reason.

Remedy: – check the plug–in connections – Replace control module

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

028 Actual current sensing during power–up

Cause: When the current actual value sensing runs up, or in cyclic operation at pulse inhibit, a 0 current is expected. The drive system then identifies that no currents are flowing (excessive deviation to the theoretical center frequency). It is possible that the hardware for the current actual value sensing is defective.

Remedy: – check whether the control module is correctly inserted – check the plug–in connections – Replace control module – replace power section

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

029 Incorrect measuring circuit evaluation. Suppl. info: \%X

Cause: The motor measuring system has a motor encoder with voltage output which requires a measured circuit evaluation with voltage input, or a resolver with appropriate evaluation. Another measuring circuit evaluation was identified. Supplementary information: only for siemens–internal error diagnostics

Remedy: – check the plug–in connections
– implement noise suppression measures (screening, check ground connections, ...) – control module and encoder must be the same type (sin/cos or resolver) – Replace control module

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

030 S7 communication error. Supplementary info: \%X

Cause: A fatal communication error was identified, or the drive software is no longer consistent. The cause is erroneous communications or a hardware fault on the control module.
Supplementary information: only for siemens–internal error diagnostics

Remedy: – implement noise suppression measures (screening, check ground connections, ...) – Replace control module

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

031 Internal data error. Suppl. info: \%X

Cause: Error in the internal data, e.g. errors in the element / block lists (incorrect formats, ...). The drive software is no longer consistant. The cause is propably a hardware fault on the control module.
Supplementary information: only for siemens–internal error diagnostics

Remedy: – re–load drive software – Replace control module

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

032 Incorrect number of current setpoint filters

Cause: An illegal number of current setpoint filters (> 4) has been entered.

Remedy: Correct number of current setpoint filters (P1200).

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

033 Incorrect number of speed setpoint filters

Cause An illegal number of speed setpoint filters (> 2) has been entered. Remedy

Correct number of speed setpoint filters (P1500) Acknowledge / Stop

POWER ON / STOP II (SRM) STOP I (ARM)

034 Axis count function has failed

Cause The function for determining the number of axes that physically exist on the power section has calculated an illegal value.

Remedy Check that the control module is correctly inserted in the power section or whether the power section is defective.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

035 Error when saving the user data. Supplementary info: \%X

Cause An error occurred when saving the user data in the FEPROM on the memory module. Cause: Data transfer error, FEPROM memory cell defective Note: The user data which was last saved, is still available as long as a new data backup was unsuccessful.
Supplementary information: only for siemens–internal error diagnostics

Remedy Initiate another data backup.
If data backup is still unsuccessful after several attempts, then the memory module must be replaced. If the user data, valid up to the error, is to be used in the new memory module, then it must be read out via Si-moCom U before the memory module is replaced, and loaded again after it has been replaced.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

036 Error when downloading the firmware. Suppl. info: \%X

Cause An error occurred when loading a new firmware release. Cause: Data transfer error, FEPROM memory cell defective
Note: As the previously used firmware was erased when downloading, the drive expects a new firmware download after RESET or POWER ON.
Supplementary information: only for siemens–internal error diagnostics

Remedy Execute RESET or POWER ON.
If a download is still unsuccessful after several attempts, the memory module must be replaced. If this is unsuccessful the control module is defective and must be replaced.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

037 Error when initializing the user data. Supplementary info: \%X

Cause An error occurred when loading the user data from the memory module. Cause: Data transfer error, FEPROM memory cell defective Supplementary information: only for siemens–internal error diagnostics

Remedy Execute POWER ON.
If a download is still unsuccessful after several attempts, the memory module must be replaced. If this is unsuccessful the control module is defective and must be replaced.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

039 **Error during power section identification. Supplementary info: \%X**

Cause: Supplementary information
0x100000:
More than 1 power section type was identified.
0x200000:
No power section type was identified, although it would have been possible.
0x30xxxx:
The identified power section differs from the entered power section (P1106). To xxxx: the code of the identified power section is entered here.
0x400000:
Different power section codes (P1106) are entered for this 2–axis module.

Remedy: – check whether the control module is correctly inserted in the power section
– execute RESET or POWER ON

Acknowledge / Stop: POWER ON / STOP II (SRM) STOP I (ARM)

040 **Expected option module is not available.**

Cause: The parameterization (P0875) expects an option module which is not available on this control module.

Remedy: Compare the type of the expected option module (P0875) with the type
of the inserted option module (P0872) and check/replace the inserted option module or cancel the option module with P0875 = 0.

Acknowledge / Stop: POWER ON / STOP II (SRM) STOP I (ARM)

041 **Firmware does not support the option module**

Cause: The parameterization (P0875) expects an option module which is not supported by the firmware release of the control module.

Remedy: The following is valid for SIMODRIVE 611 universal:
– upgrade the firmware
– use a legal option module
– cancel the option module with P0875 = 0
The following is valid for SIMODRIVE 611 universal E:
– use a legal option module
– cancel the option module with P0875 = 0

Acknowledge / Stop: POWER ON / STOP II (SRM) STOP I (ARM)

042 **Internal software error. Supplementary info \%u**

Cause: There is an internal software error.
Supplementary information: only for siemens–internal error diagnostics

Remedy: – Execute POWER ON–RESET (press button R)
– Re–load the software into the memory module (execute software update)
– Replace the memory module
– Replace control module

Acknowledge / Stop: POWER ON / STOP II (SRM) STOP I (ARM)

043 **Firmware, option module**

Cause: The option module does not contain the currently required firmware.

Remedy: Use a module with suitable firmware or upgrade the firmware

Acknowledge / Stop: POWER ON / STOP II (SRM) STOP I (ARM)

044 **Option module failed**

Cause The option module has failed.
Remedy Replace the option module
Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

045 **Expected option module is axially unequal**

Cause The option module type, expected from the parameterization, is different for the two axes of a two–axis module.
Remedy Set the expected option module type in P0875 the same for both axes, or cancel for axis B by setting P0875 to 0.
Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

101 **Target position block \%u > plus software limit switch**

Cause The target position specified in this block lies outside the range limited by P0316 (plus software limit switch).
Remedy – Change the target position in the block
– Set the software limit switches differently
Acknowledge / Stop RESET FAULT MEMORY / STOP VI

102 **Target position block \%u < minus software limit switch**

Cause The target position specified in this block lies outside the range limited by P0315 (minus software limit switch).
Remedy – Change the target position in the block
– Set the software limit switches differently
Acknowledge / Stop RESET FAULT MEMORY / STOP VI

103 **Block number \%u: direct output function not possible**

Cause For the SET_O or RESET_O command, an illegal value was entered in P0086:64 (command parameter).
Remedy Enter value 1, 2 or 3 in P0086:64 (command parameter).
Acknowledge / Stop RESET FAULT MEMORY / STOP V

104 **Block \%u: jump destination does not exist**

Cause A jump is programmed to a non–existent block number in this traversing block.
Remedy Program the existing block number.
Acknowledge / Stop RESET FAULT MEMORY / STOP VI

105 **Illegal mode in the block \%u specified**

Cause Illegal information is in P0087:64 (mode). A position of P0087:64 has an illegal value.
Remedy Check P0087:64 and correct.
Acknowledge / Stop RESET FAULT MEMORY / STOP VI

106 **Block \%u: Mode ABS_POS for linear axis not possible**

Cause For a linear axes, the positioning mode ABS_POS was programmed (only for rotary axes).
Remedy Change P0087:64 (mode).
Acknowledge / Stop RESET FAULT MEMORY / STOP VI

107 **Block \%u: Mode ABS_NEG for linear axis not possible**

Cause For a linear axes, the positioning mode ABS_NEG was programmed (only for rotary axes).
Remedy Change P0087:64 (mode).
Acknowledge / Stop RESET FAULT MEMORY / STOP VI

108 **Block number \%u available twice**

Cause There are several traversing blocks with the same block number in the program memory. The block numbers must be unique over all traversing blocks.
Remedy Assign unique block numbers.
Acknowledge / Stop RESET FAULT MEMORY / STOP VI

109 External block change in the block \%u not requested

Cause: External block change was not requested for a traversing block with block step enable CONTINUE EXTERNAL and P0110 (configuration of external block change) = 0.

Remedy: Eliminate the cause for the missing edge at the input terminal resp. at the PROFIBUS control signal STW1.13.

Acknowledge / Stop: RESET FAULT MEMORY / STOP V

110 Selected block number \%u does not exist

Cause: A block number was selected which is not available in the program memory or has been suppressed.

Remedy: Select the existing block number.
Program the traversing block with the selected block number.

Acknowledge / Stop: RESET FAULT MEMORY / STOP VI

111 GOTO in block number \%u illegal

Cause: The step command GOTO may not be programmed for this block number.

Remedy: Program another command.

Acknowledge / Stop: RESET FAULT MEMORY / STOP VI

112 Activate traversing task and start referencing simultaneously

Cause: For the ”activate traversing task” and ”start referencing” input signals, a positive edge was simultaneously identified. At power–on or POWER–ON RESET, if both input signals have a ”1” signal, then for both signals a 0/1 edge (positive edge) is simultaneously identified.

Remedy: Reset both input signals, and re–start the required function after the fault has been acknowledged.

Acknowledge / Stop: RESET FAULT MEMORY / STOP IV

113 Activate the traversing task and jog simultaneously

Cause: For the ”activate traversing task” and ”Jog 1” or ”Jog 2” input signals, a positive edge was simultaneously identified. At power–on or POWER–ON RESET, if both input signals have a ”1” signal, then for both signals a 0/1 edge (positive edge) is simultaneously identified.

Remedy: Reset both input signals, and re–start the required function after the fault has been acknowledged.

Acknowledge / Stop: RESET FAULT MEMORY / STOP IV

114 block step enable END in block number \%u expected

Cause: The traversing block with the highest block number does not have END as block step enable.

Remedy:
– Program this traversing block with block step enable END.
– Program the GOTO command for this traversing block.
– Program additional traversing blocks with higher block number and program the block step enable END (highest block number) in the last block.

Acknowledge / Stop: RESET FAULT MEMORY / STOP VI

115 Traversing range start reached

Cause: The axis has moved to the traversing range limit in a block with the command ENDLOS_NEG (–200 000 000 MSR).

Remedy:
– Acknowledge fault
– Move away in the positive direction (e.g. jog)

Acknowledge / Stop: RESET FAULT MEMORY / STOP V

116 Traversing range end reached

Cause: The axis has moved to the traversing range limit in a block with the command ENDLOS_POS (200 000 000 MSR).

Remedy:
– Acknowledge fault
– Move away in the negative direction (e.g. jog)

Acknowledge / Stop: RESET FAULT MEMORY / STOP V

117 Target position block \%u < traversing range start

Cause: The target position specified in this block lies outside the absolute traversing range (–200 000 000 MSR).

Remedy: Change the target position in the block

Acknowledge / Stop: RESET FAULT MEMORY / STOP VI

118 Target position block \%u < traversing range end

Cause: The target position specified in this block lies outside the absolute traversing range (200 000 000 MSR).

Remedy: Change the target position in the block

Acknowledge / Stop: RESET FAULT MEMORY / STOP VI

119 PLUS software limit switch actuated

Cause: The axis has traveled to the plus software limit switch (P0316) in a block with the command ENDLOS_POS.

Remedy:
– Acknowledge fault
– Move away in the negative direction, jog mode

Acknowledge / Stop: RESET FAULT MEMORY / STOP V

120 MINUS software limit switch actuated

Cause: The axis has traveled to the minus software limit switch (P0315) in a block with the command ENDLOS_NEG.

Remedy:
– Acknowledge fault
– Move away in the positive direction, jog mode

Acknowledge / Stop: RESET FAULT MEMORY / STOP V

121 Jog 1 and Jog 2 simultaneously active

Cause: The ”Jog 1” and ”Jog 2” input signals were simultaneously activated.

Remedy:
– Reset both input signals
– Acknowledge the fault
– Activate the required input signal

Acknowledge / Stop: RESET FAULT MEMORY / STOP II

122 Parameter \%u: value range limits violated

Cause: The value range limit of the parameter was violated when the dimension system was changed over from inches to millimeters.

Remedy: Place the parameter value within the value range.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

123 Linear encoder for the selected dimension system illegal

Cause: For a linear encoder, the dimension system was set to degrees.

Remedy: Change the dimension system setting (P0100).

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

124 Referencing and jog simultaneously started

Cause: For the ”start referencing” and ”Jog 1” and ”Jog 2” input signals, a positive edge was simultaneously identified.

Remedy: Reset both input signals, and re–start the required function after the fault has been acknowledged.

Acknowledge / Stop RESET FAULT MEMORY / STOP V

125 Falling edge of the reference cam not identified

Cause When moving away from the reference cams, the traversing range limit was reached, as the 1/0 edge of the reference cam was not identified.

Remedy Check the ”reference cam” input signal and repeat the reference point approach.

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

126 Block \%u: ABS_POS for rotary axis without modulo conversion not possible

Cause The ABS_POS positioning mode is only permitted for a rotary axis with activated module conversion (P0241 = 1).

Remedy Use the valid positioning mode for this axis type.

Acknowledge / Stop RESET FAULT MEMORY / STOP VI

127 Block \%u: ABS_NEG for rotary axis without modulo conversion not possible

Cause The ABS_NEG positioning mode is only permitted for a rotary axis with activated modulo conversion (P0241 = 1).

Remedy Use the valid positioning mode for this axis type.

Acknowledge / Stop RESET FAULT MEMORY / STOP VI

128 Block \%u: Target position outside the modulo range

Cause The programmed target position (P0081:64) is outside the modulo range set (P0242).

Remedy Program valid target position.

Acknowledge / Stop RESET FAULT MEMORY / STOP VI

129 Maximum velocity for a rotary axis with modulo conversion too high

Cause The programmed maximum velocity (P0102) is too high to correctly calculate the modulo offset. The maximum velocity may only be so high, that 90% of the modulo range (P0242) can be traveled through within one interpolation cycle (P1010).

Remedy Reduce maximum velocity (P0102).

Acknowledge / Stop RESET FAULT MEMORY / STOP V

130 Controller or pulse enable withdrawn in motion

Cause Possible causes are:
– one of the following enable signals was withdrawn when moving: Terminal 48, 63, 64, 663, 65.x, PROFIBUS enable signals, PC enable from SimoCom U
– another fault has occurred, which causes the controller or pulse enable to be withdrawn

Remedy Set the enable signals and check the cause of the first fault and remove.

Acknowledge / Stop RESET FAULT MEMORY / STOP II

131 Following error too high

Cause Possible causes are:
– the torque or acceleration capability of the drive is exceeded
– position measuring system fault
– the position control sense is not correct (P0231)
– mechanical system blocked
– excessive traversing velocity or excessive position setpoint differences

Remedy Check the above causes and remove.

Acknowledge / Stop RESET FAULT MEMORY / STOP II

132 Drive located after the minus software limit switch

Cause The axis was moved to the minus software limit switch (P0315), jog mode. The fault can also occur if the software limit switches are inactive, if the position actual value falls below the –200 000 000 MSR limit.

Remedy Return the drive into the traversing range using jog button 1 or 2. Then acknowledge the fault.

Acknowledge / Stop RESET FAULT MEMORY / STOP III

133 Drive located after the plus software limit switch

Cause The axis was moved to the plus software limit switch (P0316), jog mode. The fault can also occur if the software limit switches are inactive, if the position actual value exceeds the 200 000 000 MSR limit.

Remedy Return the drive into the traversing range using jog button 1 or 2. Then acknowledge the fault.

Acknowledge / Stop RESET FAULT MEMORY / STOP III

134 Positioning monitoring has responded

Cause The drive has not yet reached the positioning window (P0321) after the positioning monitoring time (P0320) has expired.
Possible causes:
– Positioning monitoring time (P0320) parameters too low – Positioning window (P0321) parameters too low – Position loop gain (P0200) too low – Position loop gain (P0200) too high (instability/tendency to oscillate) – Mechanical block

Remedy Check above parameters and correct.

Acknowledge / Stop RESET FAULT MEMORY / STOP II

135 Standstill monitoring has responded

Cause The drive has left the standstill window (P0326) after the standstill monitoring time (P0325) has expired.
Possible causes are:
– Standstill monitoring time (P0325) parameters too low – Standstill window (P0326) parameters too low – Position loop gain (P0200) too low – Position loop gain (P0200) too high (instability/tendency to oscillate) – Mechanical overload – Check connecting cable motor/converter (phase missing, exchanged)

Remedy Check above parameters and correct.

Acknowledge / Stop RESET FAULT MEMORY / STOP II

136 Conv.factor,feedforward contr.speed,parameter set \%d,cannot be represented

Cause The conversion factor in the position controller between velocity and speed cannot be displayed.
This factor depends on the following parameters:
– Spindle pitch (P0236), for linear axes
– Gearbox ratio (P0238:8 / P0237:8).

Remedy Check the above mentioned parameters and correct.

Acknowledge / Stop RESET FAULT MEMORY / STOP II

137 **Conv.factor,pos.contr.output,parameter set \%d,cannot be represented**

Cause The conversion factor in the position controller between the following error and the speed setpoint cannot be displayed.
This factor depends on the following parameters:
– spindle pitch (P0236) (for linear axes)
– gearbox ratio P0238:8 / P0237:8
– position control loop gain P0200:8

Remedy Check the above mentioned parameters and correct.

Acknowledge / Stop RESET FAULT MEMORY / STOP II

138 **Conversion factor between the motor and load too high**

Cause The conversion factor between the motor and load is greater than 2 to the power of 24 or less than 2 to the power of –24.

Remedy Check the following parameters and correct:
P0236, P0237, P0238, P1005, P1024

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

139 **Modulo range and ratio do not match**

Cause For multi–turn absolute value encoders, the ratio between the encoder and load must be set so that the full encoder range is an integral multiple of the modulo range.
The following condition must be fulfilled:
P1021 * P0238:8 / P0237:8 * 360 / P0242 must be integer numbers.

Remedy – Check and correctP1021, P0238:8, P0237:8
– adapt the modulo range (P0242)

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

140 **Minus hardware limit switch**

Cause A 1/0 edge was identified at the ”Minus hardware limit switch” input signal.

Remedy Return the drive into the traversing range using jog button 1 or 2. Then acknowledge the fault.

Acknowledge / Stop RESET FAULT MEMORY / STOP III

141 **Plus hardware limit switch**

Cause A 1/0 edge was identified at the ”Plus hardware limit switch” input signal.

Remedy Return the drive into the traversing range using jog button 1 or 2. Then acknowledge the fault.

Acknowledge / Stop RESET FAULT MEMORY / STOP III

142 **Reference point approach with ext. block change via I0.x**

Cause While a block with external block change via I0.x is in intermediate stop, reference point approach was started.

Remedy Before starting the reference point approach, terminate block execution with external block change.

Acknowledge / Stop RESET FAULT MEMORY / STOP V

160 **Reference cam not reached**

Cause After starting the reference point approach, the axis moves through the distance in P0170 (max. distance to the reference cam) without finding the reference cam.

Remedy – Check the ”reference cam” signal – Check P0170
– If it is an axis without reference cam, then set P0173 to 1

Acknowledge / Stop RESET FAULT MEMORY / STOP V

161 Reference cams too short

Cause: When the axis moves to the reference cam, and does not come to a standstill at the cam, then this error is signaled, i.e. the reference cam is too short.

Remedy: – Set P0163 (reference point approach velocity) to a lower value – Increase P0104 (maximum deceleration) – Use larger reference cam

Acknowledge / Stop RESET FAULT MEMORY / STOP V

162 No zero reference pulse available

Cause: After the reference cam was left, the axis moved through the distance in P0171 (max. distance between reference cam/zero pulse) without finding the zero pulse.

Remedy: – Check the encoder with reference to the zero mark – Set P0171 to a higher value

Acknowledge / Stop RESET FAULT MEMORY / STOP V

505 Meas.circ.error motor meas.syst.abs.track

Cause: 1. The motor absolute track (CD track) is monitored for an interrupted conductor. For optical encoders, the absolute track supports the evaluation of the mechanical position within one motor revolution.
2. For absolute encoders with EnDat interface, this fault displays an initialization error.
Note:
More information on the reason for the fault is stored in P1023 (diagnostics measuring circuit motor absolute track).

Remedy: – Check the encoder, encoder cables and connectors between the motor and control module
– Incorrect encoder cable type
– Check for sporadic interruptions (loose contact, e.g. when the drag cable is being moved)
– Remove noise which is coupled in due to inadequate screening of the cable by replacing the encoder cable
– Replace the control module
– Incorrect encoder type configured (e.g. ERN instead of EQN)
– Replace encoder
For synchronous motors:
Replace the complete motor (including the motor measuring system, as the encoder can only be adjusted in the factory)
For induction motors:
Only one encoder has to be replaced

Acknowledge / Stop: POWER ON / STOP I

507 Synchronization error rotor position

Cause	The difference between the actual rotor position and the new rotor position, which was determined by fine synchronization is greater than 45 degrees electrical. When commissioning a linear motor with rotor position identification (e.g. linear motor, 1FE1 motor), the fine synchronization was not adjusted.
Remedy	– Adjust the fine synchronization using P1017 (commissioning help function) – check the encoder cable, encoder cable connection and grounding (possibly EMC problems) – Check the screen connection at the front control module panel (top screw) – Replace encoder – Replace motor – Replace the control module For linear motors: – Check the adjustment of the angular commutation offset – Check the screen connection of the motor temperature cable – For distance–coded reference marks in the dialog box ”Measuring system/encoder”, was the ”Incremental – several zero marks” point selected?
Acknowledge / Stop	POWER ON / STOP I

508 Zero mark monitoring, motor measuring system

Cause	The measured rotor position fluctuates between 2 encoder zero marks (encoder lines may have been lost). Note: The encoder monitoring function can be disabled using P1600.8.
Remedy	– Use the original Siemens pre–assembled encoder cables (better screening) – Check the encoder, encoder cables and connectors between the motor and control module – Check the screen connection at the front panel of the control module (top screw) – Check for sporadic interruptions (loose contact, e.g. when the drag cable is being moved) – Replace the encoder cables or the control module – For toothed–wheel encoders, check the clearance between the toothed wheel and sensor – Exchange the encoder or motor For synchronous motors: Replace the complete motor (including the motor measuring system, as the encoder can only be adjusted in the factory) For induction motors: Only one encoder has to be replaced For linear motors: – For the RGH22B measuring system from Renishaw, the ”BID” signal must be connected with 0 V (reference mark in one direction). – Check the screen connection of the motor temperature cable. – For distance–coded reference marks in the dialog box ”Measuring system/encoder”, was the ”Incremental – several zero marks” point selected?
Acknowledge / Stop	POWER ON / STOP I

509 Drive converter limiting frequency exceeded

Cause: The speed actual value has exceeded the maximum permissible value.

Remedy:
– encoder pulse number is too low, enter the actual encoder pulse number in P1005
– stop the belt slipping in open–loop torque controlled mode (the belt slips)
– check P1400 (rated motor speed)
– check P1146 (maximum motor speed)
– check P1147 (maximum speed actual value)
– check P1112 (motor pole pair number)
– check P1134 (rated motor frequency)

Acknowledge / Stop: RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

515 Heatsink temperature exceeded

Cause: The power section temperature is sensed using a temperature sensor on the heatsink. The drive is immediately shut down 20 seconds after the heatsink temperature alarm in order to prevent the power section being thermally destroyed (regenerative stop).

Remedy: Improve the drive module cooling, e.g. using:
– Higher airflow in the switching cabinet, possibly cool the ambient air of the drive modules – Avoid many acceleration and braking operations which follow quickly one after the other – Check that the power section for the axis/spindle is adequate, otherwise use a higher–rating module – Ambient temperature too high (refer to the Planning Guide) – Permissible installation altitude exceeded (refer to the Planning Guide) – Pulse frequency too high (refer to the Planning Guide) – Check and, if required, replace the fan (external fan for 300/400 A module) – Maintain the minimum clearance above and below the power section (refer to the Planning Guide)

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

597 PROFIBUS: Drive not in synchronism. Supplementary information: \%X

Cause: Supplementary information 0x01:
The master sign–of–life (STW2 Bit 12–15) has more consecutive failures than are permitted. The permissible sign–of–life errors are indicated via P0879 Bit 2–0 (configuration of synchronous PROFIBUS).
0x02:
In operation, the global control clock cycle had more consecutive failures than are permitted.

Remedy:
– Check whether the PROFIBUS master can operate in synchronism with the clock cycle, and that the necessary global–control frames are output for operation in synchronism with the clock cycle.
– Check whether clock synchronism has been activated in the bus configuration, although it is not controlled by the master used.
– Check whether the master sign–of–life (STW2, bits 12–15) is received and is incremented in the parameterized clock cycle.

Acknowledge / Stop RESET FAULT MEMORY / STOP II

598 PROFIBUS: Synchronization error. Supplementary info: \%X

Cause: Supplementary information 0x01:
The expected 1st global control clock cycle display did not occur within the waiting time. 0x02: PLL synchronization unsuccessful 0x03: When synchronizing to the clock cycle, the global control clock cycle had more consecutive failures than are permitted. 0x06: The data frames w. the process data (setpoint direction) were only received after the time (To–125us) in the slave has expired.

Remedy: – Check whether the PROFIBUS master can operate in synchronism with the clock cycle, and that the necessary global–control frames are output for operation in synchronism with the clock cycle.
– Check whether clock synchronism has been activated in the bus configuration, although it is not controlled by the master used.
– Check whether the time Tdx, defined in the master software, corresponds to the actual data transfer time to all of the slaves and is less than the configured time (To–125us).

Acknowledge / Stop RESET FAULT MEMORY / STOP II

599 PROFIBUS: Cyclic data transfer was interrupted

Cause: The cyclic data transfer between the master and slave was interrupted due to the fact that cyclic frames were missing, or due to the reception of a parameterizing or configuring frame.

Examples:

– bus connection interrupted – Master runs up again

Remedy: Check the master and bus connection to the master. As soon as cyclic data transfer runs again, the fault can be acknowledged.

Acknowledge / Stop RESET FAULT MEMORY / STOP II

601 Error in AD conversion, terminal 56/14 or 24/20

Cause: A timing error was identified when reading–out the A/D converter for terminal 56.x/14.x or 24.x/20.x. The read values are probably incorrect / faulty.

Remedy: Replace closed–loop control module

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

602 Open–loop torque controlled oper. w/o encoder is not perm.

Cause: In the IM mode, open–loop torque–controlled operation was selected via the input terminal or via PROFIBUS–DP.

Remedy: Deselect the torque–controlled operation or leave the IM mode (changeover speed P1465).

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

603 Changeover to non–parameterized motor data set

Cause: An attempt was made to change over to a motor data set which was not parameterized.

Remedy: Parameterizing motor data set

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

605 Position controller output limited

Cause: The speed setpoint requested from the position controller lies above the max. motor speed.

Possible causes:

– Programmed velocity (P0082:64) too high
– Max. acceleration (P0103) or deceleration (P0104) too high – Axis is overloaded or blocked

Remedy: – Check parameters

Acknowledge / Stop RESET FAULT MEMORY / STOP II

606 Flux controller output limited

Cause: The specified flux setpoint cannot be realized, although maximum current is input. – Motor data are incorrect – Motor data and motor connection type (star/delta) do not match – Motor has stalled because motor data are extremely inaccurate – Current limit is too low for the motor (0.9 * P1238 * P1103 < P1136) – Power section is too small

Remedy: – Correct the motor data
– If required use a larger power section

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

607 Current controller output limited

Cause: The entered setpoint cannot be impressed in the motor, although the maximum voltage is available. Either the motor is not connected or a phase is missing.

Remedy: – check the connecting cable, motor/drive converter (phase missing) – Check the motor contactor – DC link voltage present?
– check the DC link busbar (check that the screws are tight)
– Uce monitoring function in the power section has responded (RESET by powering off/powering on) – Replace the power section or control module

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

608 Speed controller output limited

Cause

The speed controller is at its limit for an inadmissibly long time (torque or current limit). The permissible time is defined in P1605, the upper speed limit when the monitoring responds, in P1606. Synchronous motor: In correct operation, the correctly optimized axis drive should never reach its current limit, not even with large speed changes (changing from rapid traverse in the positive direction to rapid traverse in the negative direction). P1605 = 200 ms P1606 = 8000 rev/min Induction motor: Acceleration and braking with the maximum torque/current are usual in operation, only a stalled drive (0 speed) is monitored.
P1605 = 200 ms P1606 = 30 rev/min
1. At the first commissioning, after the software has been replaced or the software has been upgraded, after the parameters have been entered the ”calculate motor data” or ”calculate controller data” function was not executed. The drive then keeps the default values (for the values to be calculated this is zero) which can, under certain circumstances, result in this fault (P1605 and P1606 should be adapted to the mechanical and dynamic capabilities of the axis).
2. An undesirable input of a large torque reduction via the analog inputs or via PROFIBUS. On PROFIBUS, this effect especially occurs when changing over from positioning operation to operation with speed set-point input (check whether a torque reduction has been entered. Diagnostics via P1717, 0%: no torque, 100%: full torque).

Remedy

– Check connecting cable motor/converter (phase missing, exchanged) – Check the motor contactor – Check the torque reduction (P1717) – DC link voltage present?
– Check the DC link voltage (check that the screws are tight)
– Use monitoring function in the power section has responded (RESET by powering off/powering on) – Unblock the motor – Is the motor encoder connected?
– Check the motor encoder cable screen – Is the motor grounded (PE connection)?
– Check the encoder pulse number (P1005)
– Does the encoder cable fit to the encoder type?
– Check the direction of rotation of the encoder tracks (e.g. toothed–wheel encoder, P1011)
– Replace the power section or control module
Adapt parameters P1605 and P1606 to the mechanical and dynamic capabilities of the axis. Check whether a torque reduction has been entered (diagnostics via P1717, 0%: no torque, 100%: full torque).
For linear motors:
– Check actual value inversion
– Check the reduction in the maximum motor current (P1105) and if required increase the value
– Check the power cable connection
– For the parallel circuit configuration, are the motors correctly assi-gned and electrically connected?

Acknowledge / Stop

RESET FAULT MEMORY / STOP I

609 Encoder limit frequency exceeded

Cause
The speed actual value exceeds the encoder frequency.
– Incorrect encoder
– P1005 does not correspond to the no. of encoder pulses
– Encoder defective
– Motor cable defective or not properly attached
– Shield on motor encoder cable is not connected
– Defective control module

Remedy
– Enter correct encoder data / replace encoder
– Check the encoder pulse number (P1005)
– Attach motor cable correctly or replace
– connect the motor encoder cable screen
– Reduce the speed setpoint input (P1401)
– Replace control module

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

610 Rotor position identification has failed

Cause
A rotor position could not be determined from the measurement signals (motor current), as no significant saturation effects occurred.

Remedy
– increase current via P1019
– check the connecting cable, motor/drive converter (phase missing)
– Check the motor contactor
– DC link voltage present?
– check the DC link busbar (check that the screws are tight)
– Uce monitoring function in the power section has responded (RESET by powering off/powering on)
– Replace the power section or control module

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

611 Illegal motion during rotor position identification

Cause
During the rotor position identification (motor current measurement), the motor rotated more than the value entered in P1020. The rotation could be caused by having powered on with the motor already rotating, or caused by the identification routine itself.

Remedy
– If the interchange was caused by the identification itself and if the error occurs again, then reduce P1019 or increase P1020.
– Lock the motor rotor during the identification routine.

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

612 Illegal current during rotor position identification

Cause
1. Current was >= 1.2 * 1.05 * P1107 while rotor position identification was active 2. Current was >= P1104 while rotor position identification was active

Remedy
With the rotor position identification (P1011.12 and P1011.13) activated, if required, check and reduce P1019 (current, rotor position identification)

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

613 Shutdown limit, motor overtemperature (P1607) exceeded

Cause

The motor temperature (sensed via the temperature sensor KTY 84 and fed to the module via the motor encoder cable) has exceeded the temperature limit in P1607.

Remedy

– Avoid many acceleration and braking operations which follow one another quickly.
– Motor overload?
– Check whether the motor output is sufficient for the drive, otherwise use a more powerful motor, possibly together with a higher–rating power section.
– Check the motor data. The current could be too high due to incorrect motor data.
– Check the temperature sensor. – Check the motor fan.
– Check the motor encoder cable. – Motor encoder defective?
– Check and possibly reduce P1230 or P1235.
The motor temperature monitoring can be disabled with P1601 bit 13 = 1.
For linear motors:
– Check the parameters for the motor temperature monitoring P1602 (alarm threshold, motor overtemperature) = 120 degrees C P1603 (timer, motor temperature alarm) = 240 s P1607 (shutdown limit, motor temperature) = 155 degrees C P1608 (fixed temperature) = 0 degrees C
P1608 = 0 —> Temperature sensing active P1608 > 0 —> Fixed temperature active
– If the temperature monitoring is exclusively realized using an external PLC, a fixed temperature must be entered into P1608 (e. g. 80 degrees C). This disables the drive temperature monitoring.
– Check the power connector at the motor
– Check the connection of the temperature sensor coupling cable at the end of the power cable; approximately 580 ohm must be measured at 20 degrees C
– With the measuring system connectors withdrawn (X411), are approximately 580 ohm measured between PIN 13 and PIN 25 of the encoder cable at 20 degrees C?
– Check that the measuring system connector is correctly located at the drive (X411) – Only KTY may be connected for drives connected in parallel – If the temperature switch and temperature sensor are connected in series, the temperature sensor (NC contact) may have responded, or the temperature switch is defective

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

614 Delayed shutdown for motor overtemperature (P1602 / P1603)

Cause: The motor temperature (sensed via the temperature sensor KTY 84 and fed to the module via the motor encoder cable) has exceeded the temperature in P1602 for a time longer than in P1603.

Remedy: – Avoid many acceleration and braking operations which follow one another quickly.

– Motor overload?
– Check whether the motor output is sufficient for the drive, otherwise use a more powerful motor, possibly together with a higher–rating power section.
– Check the motor data. The current could be too high due to incorrect motor data.
– Check the temperature sensor. – Check the motor fan.
– Check the motor encoder cable. – Motor encoder defective?
– Check and possibly reduce P1230 or P1235.
The motor temperature monitoring can be disabled with P1601 bit 14 = 1. For linear motors: – Check the parameters for the motor temperature monitoring P1602 (alarm threshold, motor overtemperature) = 120 degrees C P1603 (timer, motor temperature alarm) = 240 s P1607 (shutdown limit, motor temperature) = 155 degrees C
P1608 (fixed temperature) = 0 degrees C P1608=0 Temperature sensing active P1608>0 Fixed temperature active
– If the temperature monitoring is exclusively realized using an external PLC, a fixed temperature must be entered into P1608 (e. g. 80 degrees C). This disables the drive temperature monitoring.
– Check the power connector at the motor
– Check the connection of the temperature sensor coupling cable at the end of the power cable; approximately 580 ohm must be measured at 20 degrees C
– With the measuring system connectors withdrawn (X411), are approximately 580 ohm measured between PIN 13 and PIN 25 of the encoder cable at 20 degrees C?
– Check that the measuring system connector is correctly located at the drive (X411) – Only KTY may be connected for drives connected in parallel – If the temperature switch and temperature sensor are connected in series, the temperature sensor (NC contact) may have responded, or the temperature switch is defective

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

680 Illegal motor code number

Cause: A motor code was entered in P1102 for which no data is available. Remedy

Start–up again and enter the correct motor code number (P1102).

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

681 Illegal power section code number

Cause: A power section code was entered in P1106, for which no data is available.

Remedy: Enter the correct power section code in P1106.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

682 Illegal encoder code number

Cause: An encoder code was entered in P1006, for which no data is available.

Remedy: Enter the correct encoder code in P1006 or the code for a third party encoder (99).

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

683 (\%d) **Calculate controller data was unsuccessful at first start–up**

Cause: An error occurred at the first start–up with ”calculate controller data”. Under fault conditions, the parameters for the current controller, flux controller and speed controller could not be optimally assigned.

Remedy: Read out the detailed error cause from P1080 and remove the cause. Then initiate ”calculate controller data” again with P1080 = 1. Repeat this operation, until no error is displayed in P1080. Then save in the FEPROM and execute a POWER ON–RESET.
Error coding in the supplementary info and P1080: –15 magnetizing reactance (P1141) = 0 –16 leakage reactance (P1139 / P1140) = 0 –17 rated motor frequency (P1134) = 0 –18 rotor resistance (P1138) = 0 –19 motor moment of inertia (P1117) = 0 –21 threshold speed for field weakening (P1142) = 0 –22 motor standstill current (P1118) = 0
–23 The ratio between the maximum motor current (P1104) and the motor stall current (P1118) is greater than the maximum value for the torque limit (P1230) and the power limit (P1235).
–24 The ratio between the rated motor frequency (P1134) and the rated motor speed (P1400) is inadmissible (pole pair number).

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

703 **Invalid current controller cycle**

Cause: An illegal value was entered in P1000.

Remedy: Enter a valid value in P1000.
Permissible values for P1000 are:
2 (62.5us) for single–axis positioning or for speed setpoint input
4 (125us) in each operating mode

Acknowledge / Stop: POWER ON / STOP II (SRM) STOP I (ARM)

704 **Invalid speed controller cycle**

Cause: An illegal value was entered in P1001.

Remedy: Enter a valid value in P1001.
Permissible values for P1001 are 2 (62.5 us), 4 (125us), 8 (250us), 16 (500us).
Setting 2 (62.5us) is only permissible for single–axis operation.
Further, P1001 must be >= P1000.

Acknowledge / Stop: POWER ON / STOP II (SRM) STOP I (ARM)

705 **Invalid position controller cycle**

Cause: The monitoring function identified a position controller cycle (P1009) outside the permissible limits.

Remedy: Enter a valid value in P1009.
Permissible values for P1009 lie between 32 (1 ms) and 128 (4ms).
Further, the position control cycle must be a integral multiple of the speed control cycle.

Acknowledge / Stop: POWER ON / STOP II (SRM) STOP I (ARM)

706 **Invalid interpolation cycle**

Cause: The monitoring has identified an interpolation cycle (P1010) outside the permissible limits, or an illegal ratio between the interpolation cycle and the position controller cycle (P1009).

Remedy: Enter a valid value in P1010 or correct P1009.
Permissible values for P1010 lie between 128 (4ms) and 640 (20ms).
Further, the interpolation cycle must be an integral multiple of the position controller cycle.

Acknowledge / Stop: POWER ON / STOP II (SRM) STOP I (ARM)

708 Axial deviations in current controller cycle

Cause On a 2–axis module, the current controller cycle is different for both axes.

Remedy Check P1000 and set the input values the same for both drives.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

709 Axial deviations in speed controller cycle

Cause On a 2–axis module, the speed controller cycle is different for both axes.

Remedy Check P1001 and set the input values the same for both drives.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

710 Axial deviations in position controller or interpolation cycle

Cause 1. On a 2–axis module, the position controller cycle (P1009) or the interpolation cycle (P1010) is different for the two axes.
2. Via the clock–synchronous PROFIBUS, a position controller cycle is specified for an axis in n–set mode which differs from the position controller cycle (P1009) of the other axis in positioning mode.

Remedy 1. Check P1009 / P1010 and set the same input values for both drives.
2. For synchronous PROFIBUS, adjust the bus configuration (parameter setting) with P1009.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

716 Invalid torque constant

Cause The ratio between the rated torque and rated current (torque constant [Nm/A]) in P1113 is incorrect (less than/equal to zero) or the ratio P1113 / P1112 is greater than 70.

Remedy Enter the valid torque/current ratio for the motor used in P1113 or enter a permissible ratio of P1113 / P1112.
Third–party motor:
The torque constant should be determined from the motor data sheet.
Siemens motor: The torque constant is defined by the motor code (P1102).

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

719 Motor not parameterized for delta operation

Cause When the star–delta changeover is activated using P1013, the motor is not parameterized for delta operation (motor 2).

Remedy Check and enter the parameters for delta operation (motor 2).

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

720 Invalid maximum motor speed

Cause Due to the high maximum motor speed in P1401 and the speed controller cycle in P1001, high partial speeds can occur which can result in a format overflow.

Remedy Check and correct P1401 and P1001.
The drive software is designed for large reserve margins, so that the displayed alarm can only occur as a result of a parameterizing error.
Example:
For a speed controller cycle time of 125 microseconds, a motor speed of 480 000 RPM can still be processed correctly!

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

723 Axial deviations in STS configuration

Cause: On a 2–axis module, the gating unit configuration (P1003) is different for the two gating units.

Remedy: Check P1003 and set the bits for the two module axes the same (do not change the standard setting, this represents the optimum configuration).

Acknowledge / Stop: POWER ON / STOP II (SRM) STOP I (ARM)

724 Invalid motor pole pair number

Cause: Synchronous motors:
The configured pole pair number in P1112 is incorrect (zero or negative).
Induction motors:
An invalid pole pair number was determined from P1134 and P1400.

Remedy: Synchronous motors:
Actually possible pole pair numbers are e.g. 2, 3, or 4.
Induction motors:
Determine the rated speed and rated frequency and enter correctly.

Acknowledge / Stop: POWER ON / STOP II (SRM) STOP I (ARM)

725 Invalid encoder pulse number

Cause: The encoder pulse number of the motor measuring system (P1005) is set to zero.

Remedy: Harmonize the encoder pulse number of the motor measuring system in P1005 to the encoder used. The indirect motor measuring system must always be configured for synchronous and induction motors (exception: Induction motor operation).
Standard setting: 2 048 increments/revolution

Acknowledge / Stop: POWER ON / STOP II (SRM) STOP I (ARM)

726 Invalid voltage constant

Cause: The voltage constant of the motor is set to zero in P1114.

Remedy: Determine the voltage constant of the motor used, and enter in P1114.
The voltage constant is measured as induced voltage (EMF) under no–load conditions at n = 1 000 RPM as RMS valued at the motor terminals (phase to phase).
Third–party motor:
The voltage constant should be determined from a motor data sheet.
Siemens motor: The voltage constant is determined from the motor code (P1102).

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

727 Invalid combination of power section and synchronous motor

Cause: The power section is not released for synchronous motors.

Remedy: – check configuring – use a valid power section

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

728 Torque/current adaptation factor too high

Cause: The adaptation factor between the setpoint torque and the torque generating current (Iq) in the speed controller is too high.

Remedy: Check P1103, P1107 and P1113 and if required, enter correct values.
Third–party motor:
The values should be determined from a motor data sheet. Siemens motor:
The values are determined from the motor code (P1102).

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

729 Invalid motor stall current

Cause: The motor stall current (P1118) is less than or equal to zero.

Remedy: Determine the stall current of the motor used and enter in P1118. Third–party motor: The stall current should be determined from a motor data sheet.
Siemens motor:
The stall current is determined from the motor code (P1102).

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

731 Invalid rated output

Cause: The rated motor output (P1130) of the motor is less than or equal to zero.

Remedy: Determine the rated motor output of the motor used and enter in P1130.
Third–party motor: The rated motor output should be determined from a motor data sheet.
Siemens motor:
The rated motor output is determined from the motor code (P1102).

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

732 Invalid rated speed

Cause: The rated motor speed (P1400) of the motor is less than or equal to zero.

Remedy: Determine the rated motor speed of the motor used and enter in P1400.
Third–party motor: The rated motor speed should be determined from a motor data sheet.
Siemens motor:
The rated motor speed is determined from the motor code (P1102).

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

742 V/f operation: Drive frequency, motor \%d not permissible

Cause: In V/f operation, only drive converter frequencies of 4 or 8 kHz are permissible.

Remedy: Change P100 or cancel V/f operation (P1014).
When operating with several motors/motor data sets, also set P2100/P3100/P4100 to 4 or 8 kHz.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

744 Motor changeover only permissible for the closed–loop speed controlled mode

Cause: Motor changeover (P1013) may only be activated in the closed–loop speed controlled mode (P0700 = 1).

Remedy: – Inhibit motor changeover (P1013 = 0)
– Change over into the closed–loop speed controlled mode (P0700 = 1)

Acknowledge / Stop POWER ON / STOP I

751 Speed controller gain too high

Cause: P gain, speed controller for the lower speed range (P1407) and the upper speed range (1408) were selected to be too high.

Remedy: Reduce the P gain of the speed controller.
Only optimized with the adaption disabled (P1413 = 0). The P gain (P1407) is then effective over the complete speed range. After the optimum setting has been found, adaption can be re–enabled (P1413 = 1) and the P gain optimized for the upper speed range (P1408).

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

756 Invalid speed hysteresis of the current setpoint smoothing

Cause: The hysteresis of the speed for the current setpoint smoothing (P1246) may not be greater than the threshold speed of the hysteresis (P1245), as otherwise a ”negative” lower speed would be obtained.

Remedy: P1246 (standard value: 50 [RPM]) must be entered lower than the threshold for the speeddependent setpoint smoothing (P1245, standard value: 4 000 [RPM]).

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

757 PZD config.: illegal frame no. in P0922

Cause: The frame number set in P0922 is illegal or impermissible for the operating mode currently selected via P0700.

Remedy: Check P0922 and enter valid value.

Acknowledge / Stop POWER ON / STOP II

759 Encoder/motor types do not match

Cause: A linear motor was selected, and no linear scale configured (P1027.4 = 0).
A rotating motor was selected and a linear scale configured (P1027.4 = 1).
A resolver has been selected the pole pair number (P1018) of which is illegal.
A pole pair number =1 or the pole pair number of the motor (P1112) is admissible.

Remedy: Parameterize the encoder type corresponding to the motor type and the control module.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

760 Pole pair width/scale graduations cannot be represented internally

Cause: For linear motors, the equivalent (internal) pole pair number and (internal) encoder pulse number are calculated from the pole pair width and grid spacing data. In this case, one or x pole pair widths must be an integer multiple of the encoder pulse number. This error message is output if the result of pole pair width/line division * x (up to x=16) is not an integer number, or if the calculated internal encoder pulse number is too high.
A result with a tolerance of +/– 0.001 absolute is interpreted to be an integer.

Remedy: Long travel paths:
A linear measuring system with an encoder mark number that is an integral divisor of x* pole pair widths should be used.
Short travel paths:
For short travel, only a low error can accumulate which has hardly any effect on the maximum achievable force and on the temperature rise, if the encoder pulse number fits with a deviation of more than +/–0.001 in the pole pair width. We then recommend that the pole pair width is slightly changed:
Example: Pole pair width: 56.8 mm, grid spacing: 2.7 micrometers => pole pair number = 1, encoder lines = 21037.037 => error Resolve the error by entering a pole pair width = 56.7999 mm.
=> pole pair number = 1, encoder lines = 21037.0 => no error

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

761 P0892 cannot be used with this measuring system

Cause: For incremental measuring systems with sin/cos 1 Vpp without EnDat interface, a division factor cannot be set using P0892.

Remedy: Set P0892 to 0 (factor, angular encoder pulse number/encoder pulse number).

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

762 P0893 cannot be used with this measuring system

Cause: For incremental measuring systems with sin/cos 1 Vpp without EnDat interface and for linear measuring systems with sin/cos 1 Vpp with En-Dat interface, a zero pulse offset cannot be set via P0893.

Remedy: Set P0893 (angular encoder zero pulse offset) to 0.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

764 Multiple assignment of terminal A or B (P0890)

Cause: When selecting 3 in P0890, from drive A or B (setpoint at terminal A and actual value at terminal B), it was identified, that terminal A or B were already being used by another drive. Thus, this configuration is not possible.

Remedy: Check the configuration of terminals A and B in P0890 and eliminate multiple assignments of both drives.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

765 P0890 and P0891 configure both setpoint inputs

Cause: An actual value coupling is switched in (P0891 = 1) for drive B. Simultaneously, for the same drive, terminal A or B is parameterized as position setpoint input (P0890 = 2 or 3).

Remedy: Check the configuration of terminals A and B in P0890, compare with P0891 and eliminate multiple setpoint sources.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

766 Blocking frequency > Shannon frequency

Cause: The bandstop frequency of a speed setpoint filter is greater than the Shannon sampling frequency from the sampling theorem.

Remedy: The bandstop frequency for P1514, filter 1 and P1517 for filter 2 must be less than the inverse of two speed controller cycles (1/2*P1001*31.25 microseconds).

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

767 Natural frequency > Shannon frequency

Cause: The natural frequency of a speed setpoint filter is greater than the Shannon sampling frequency from the sampling theorem.

Remedy: The natural frequency of a speed setpoint filter must be lower than the reciprocal of two speed controller cycles.
Speed setpoint filter 1:
P1520 * 0.01 * P1514 < 1 / (2 * P1001 * 31.25 microseconds) Speed setpoint filter 2: P1521 * 0.01 * P1517 < 1 / (2 * P1001 * 31.25 microseconds)

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

768 Numerator bandwidth > twice the blocking frequency

Cause: The numerator bandwidth of a current or speed setpoint filter is greater than twice the bandstop frequency. This alarm is only generated for the general bandstop, if the following is valid: Speed setpoint filter 1: P1516 > 0.0 or P1520 <> 100.0 Speed setpoint filter 2: P1519 > 0.0 or P1521 <> 100.0 Current setpoint filter 1: P1212 > 0.0 Current setpoint filter 2: P1215 > 0.0 Current setpoint filter 3: P1218 > 0.0 Current setpoint filter 4: P1221 > 0.0

Remedy: The numerator bandwidth must be less than twice the bandstop frequency. Current setpoint filter 1: P1212 <= 2 * P1210 Current setpoint filter 2: P1215 <= 2 * P1213 Current setpoint filter 3: P1218 <= 2 * P1216 Current setpoint filter 4: P1221 <= 2 * P1219 Speed setpoint filter 1: P1516 <= 2 * P1514 Speed setpoint filter 2: P1519 <= 2 * P1517

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

769 Denominator bandwidth > twice the natural frequency

Cause: The denominator bandwidth of a current or speed setpoint filter is greater than twice the natural frequency. This alarm is only generated for the general bandstop, if the following is valid: Speed setpoint filter 1: P1516 > 0.0 or P1520 <> 100.0 Speed setpoint filter 2: P1519 > 0.0 or P1521 <> 100.0 Current setpoint filter 1: P1212 > 0.0 Current setpoint filter 2: P1215 > 0.0 Current setpoint filter 3: P1218 > 0.0 Current setpoint filter 4: P1221 > 0.0

Remedy: The denominator bandwidth of a current or speed setpoint filter must be less than twice the natural frequency.
Speed setpoint filter 1: P1515 <= 2 * P1514 * 0.01 * P1520 Speed setpoint filter 2: P1518 <= 2 * P1517 * 0.01 * P1521 Current setpoint filter 1: P1211 <= 2 * P1210 Current setpoint filter 2: P1214 <= 2 * P1213 Current setpoint filter 3: P1217 <= 2 * P1216 Current setpoint filter 4: P1220 <= 2 * P1219

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

770 Format error

Cause: The calculated bandstop filter coefficients cannot be represented in the internal format.

Remedy: Change filter setting.

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

771 Induction motor oper.: drive converter frequency motor \%d not permissible

Cause: In induction motor operation (selected by P1465 < P1146), drive converter frequencies of 4 or 8 kHz are permissible.

Remedy: – change P1100
– cancel induction motor operation (P1465 > P1146)

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

772 Induction motor oper.: speed controller gain, motor \%d too high

Cause: The P gain of the speed controller (P1451) is too high.

Remedy: For the speed controller, enter a lower value for the P gain (P1451).

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

773 Not permissible to active analog input

Cause: For this particular hardware version, it is not permissible to activate the analog input.

Remedy: Use the 611U board.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

774 Induction motor oper.: changeover speed motor \%d not permissible

Cause: For mixed operation (with / without encoder) P1465 > 0, only closed–loop controlled induction motor operation is permissible (P1466 <= P1465).

Remedy: Eliminate error by selecting pure induction motor operation (P1465 = 0) or by canceling induction motor open–loop controlled operation (P1465 > P1466).

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

777 Current for the rotor position identification too high

Cause: A current was parameterized in P1019, which is greater than the current which is permissible for the motor and the power section used.

Remedy: Reduce the current via P1019.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

778 Impermissible converter frequency for rotor position ID

Cause: When selecting the rotor position identification (P1019), drive converter frequencies (P1100) of 4 or 8 kHz are permissible.

Remedy: Change the drive converter frequency or cancel the rotor position identification.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

779 Motor moment of inertia, motor \%d invalid

Cause: The motor moment of inertia (P1117) is incorrect (less than/equal to zero).

Remedy: Enter the valid motor moment of inertia for the motor used, in P1117.
Third–party motor:
The motor moment of inertia should be determined from a motor data sheet.
Siemens motor:
The characteristic motor data should be determined from the motor code (P1102).

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

780 No–load current, motor > rated motor current (motor \%d)

Cause: The motor no–load current (P1136) has been parameterized greater than the rated motor current (P1103).

Remedy: Enter the valid currents for the motor used in P1136 and P1103.
Third–party motor:
The required currents should be determined using a motor data sheet.
Siemens motor: The currents are determined using the motor code (P1102).

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

781 No–load current, motor \%d > rated power section current

Cause: The motor no–load current (P1136) has been set to higher values than the rated power section current. before SW 2.4 the following is valid: Rated power section current = P1111 from SW 2.4 the following is valid: Rated power section current = P1111 * P1099

Remedy: – Enter the valid current for the motor used in P1136.
Third–party motor:
The required currents should be determined using a motor data sheet.
Siemens motor: The currents are determined using the motor code (P1102).
– Reduce the power section pulse frequency P1100. – Use a higher–rating power section (re–commission).

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

782 Reactance motor \%d invalid

Cause: The stator leakage reactance (P1139) or the rotor leakage reactance (P1140) or the magnetizing reactance (P1141) of the motor is incorrect (less than/equal to zero).

Remedy: Determine the stator, rotor leakage reactance and magnetizing reactance of the motor used and enter in P1139, P1140 and P1141. Third–party motor: The values should be determined from a motor data sheet.
Siemens motor:
The values are determined from the motor code (P1102).

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

783 Rotor resistance, motor \%d invalid

Cause: The rotor resistance (P1138, cold) of the motor is incorrect (less than/ equal to zero).

Remedy: Determine the cold rotor resistance of the motor used and enter in P1138. Third–party motor: The following parameters may have incorrect values: P1001 (speed controller cycle) P1134 (rated motor frequency) P1138 (rotor resistance) P1139 (leakage stator reactance) P1140 (leakage rotor reactance) Check parameters and if required correct using a motor data sheet.
Siemens motor:
The rotor resistance when cold is determined using the motor code (P1102).

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

784 No–load voltage, motor \%d invalid

Cause: Error in no–load voltage P1135: – P1135 <= 0 or – P1135 > P1132 or – P1135 * P1142 / P1400 + Vser.react. > 450V. With Vser.react. = 0.181 * P1136 * P1142 * P1119

Remedy: Determine the no–load voltage of the installed motor and enter this in P1135. Third–party motor: The following parameters may have incorrect values: P1119 (inductance of the series reactor) P1132 (rated motor voltage) P1135 (no–load motor voltage) P1400 (rated motor speed) P1142 (threshold speed for field weakening) P1136 (no–load motor current) Check parameters and if required correct using a motor data sheet.
Siemens motor:
The no–load voltage is determined from the motor code (P1102).

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

785 No–load current, motor \%d invalid

Cause: The no–load current (P1136) of the motor is incorrect (less than/equal to zero).

Remedy: Determine the no–load current of the installed motor and enter in P1136.
Third–party motor: The no–load current should be determined from a motor data sheet.
Siemens motor:
The no–load current is determined from the motor code (P1102).

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

786 Field–weakening speed, motor \%d invalid

Cause: The threshold speed for field weakening for induction motors (P1142) is incorrect (less than/equal to zero).

Remedy: Determine the threshold speed for field weakening for the motor used and enter in P1142. Third–party motor: The field weakening speed should be determined from a motor data sheet.
Siemens motor:
The field weakening speed is determined from the motor code (P1102).

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

787 Induction motor oper.: feedforward control gain motor \%d cannot be displayed

Cause: The feedforward control gain for induction motors cannot be represented in the internal numerical format if the motor moment of inertia and rated motor torque were unfavorably selected.

Remedy: Operation without encoder:
Reduce the encoder pulse number (P1005), as this is used in the internal numerical format.
Operation with encoder:
Reduce the speed controller cycle (P1001).

Acknowledge / Stop RESET FAULT MEMORY / STOP II (SRM) STOP I (ARM)

788 P0891 for drive B only

Cause: An actual–value link has been activated (P0891 = 1) for drive A. The hardware does not permit this setting.

Remedy: Set P0891 to 0 for drive A.

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

789 Setpoint transfer SimoCom U ==> drive interrupted

Cause: The setpoint transfer from SimoCom U to the drive was interrupted, i.e. there is no longer an online connection. The Master Control was returned to the drive.
Communication between the two communication partners was faulty. When traversing the drive via SimoCom U, other functions were executed on the PG/PC (e.g. open online help, open file), so that the drive can only be irregularly supplied from SimoCom U.

Remedy: – Check whether SimoCom U is still operating correctly, if required, restart – Check whether the communication connection is OK, if required, replace the connecting cable – When in the online mode, do not select any time–intensive functions

Acknowledge / Stop POWER ON / STOP II (SRM) STOP I (ARM)

790 **Illegal operating mode. Supplementary info: \%u**

Cause: The selected operating mode (P0700) is not permitted for this module or axis.
Supplementary info = 0x1:
Operating mode ==0 selected on the 1st axis
Supplementary info = 0x2:
POSITIONING operating mode selected for the Nset control module
Supplementary info = 0x3:
Operating mode is not possible with this firmware release

Remedy: For supplementary info 1:
Select valid operating mode (P0700 > 0)
For supplementary info 2:
Select Nset operating mode or use a positioning module.
For supplementary info 3:
Use a firmware release which supports this operating mode.

Acknowledge / Stop: POWER ON / STOP I

791 **TTL encoder interface incorrectly parameterized**

Cause: The TTL encoder interface may only be parameterized as follows for this particular hardware version:
Drive A: P0890 = 0 or 4, 0: Interface inactive, 4: TTL encoder input
Drive B: P0890 = 0

Remedy: Set P0890 to permissible value.

Acknowledge / Stop: POWER ON / STOP II (SRM) STOP I (ARM)

797 **Error in center frequency measurement**

Cause: The speed was too high during the center frequency measurement (current calibration). The center frequency is measured automatically at run–up, or when the pulses are inhibited.

Remedy: Power up the drive converter if the motor runs at a reduced speed.

Acknowledge / Stop: POWER ON / STOP I

798 **Measured value memory active**

Cause: The measured–value memory was active during power–up.

Remedy: Run up again.

Acknowledge / Stop: POWER ON / STOP I

799 **FEPROM backup and HW Reset required**

Cause: Parameters were re–calculated. Parameters must be saved and the module run up again after this new calculation.

Remedy: The newly calculated data should be saved in the FEPROM. The new parameters become effective the next time that the module runs up!

Acknowledge / Stop: POWER ON / STOP II (SRM) STOP I (ARM)

802 **Drive rotates in response to angular encoder output parameters**

Cause: The drive was not stationary as the zero pulse offset was programmed on the angular encoder interface. Low speeds are not critical, but the inaccuracy of the zero pulse position increases in proportion to speed.

Remedy: Ensure that the drive is at a standstill, or take into account a higher inaccuracy of the zero pulse.

Acknowledge / Stop: not required / STOP VII

804 **Controller enable or on/off 1(edge) or on/off 2/3 missing**

Cause: When starting a traversing block, the controller enable is not set, i.e. one of the following signals is missing:
– Terminal 64
– Terminal 65.x
– PROFIBUS control signals (STW1.0: ON / OFF 1 (edge), STW1.2: E / OFF 3)
– PC enable (SimoCom U)

Remedy: Set the missing signal, and then re–start the traversing block, or output edge via Profibus.

Acknowledge / Stop: not required / STOP VII

805 **Pulse enable missing**

Cause: When starting a traversing block, the pulse enable is not set, i.e. one of the following signals is missing:
– terminal 48 (NE module)
– terminal NS1/NS2 (NE module)
– terminal 63 (NE module)
– terminal 663 (control module)

Remedy: Set the missing enable signal and then re–start the traversing block.

Acknowledge / Stop: not required / STOP VII

806 **OC/reject traversing task missing**

Cause: When starting a traversing block, the ”operating condition / reject traversing task” input signal is not set.

Remedy: Set the ”operating condition / reject traversing task” input signal and then re–start the traversing block.

Acknowledge / Stop: not required / STOP VII

807 **OC/intermediate stop missing**

Cause: When starting a traversing block the ”operating condition / intermediate stop” input signal is not set.

Remedy: Set the ”operating condition / intermediate stop” input signal and then re–start the traversing block.

Acknowledge / Stop: not required / STOP VII

808 **Reference point not set**

Cause: When starting a traversing block, a reference point is not set.

Remedy: Execute referencing or set a reference point using the ”set reference point” input signal.

Acknowledge / Stop: not required / STOP VII

809 **Parking axis selected**

Cause: When a traversing block is started, or when referencing is started, the parking axis function is selected.

Remedy: Cancel the ”parking axis” function and then re–start the required function.

Acknowledge / Stop: not required / STOP VII

814 Alarm threshold, motor overtemperature (P1602)

Cause: The motor temperature is sensed via a temperature sensor (KTY84) and evaluated on the drive side. This alarm is output if the motor temperature reaches the alarm threshold motor overtemperature (P1602).

Remedy:
– Avoid many acceleration and braking operations which follow one another quickly.
– Check whether the motor output is sufficient for the drive, otherwise use a higher output motor, possibly in conjunction with a higher–rating power section.
– Check the motor data. The motor current could be too high due to incorrect motor data.
– Check the temperature sensor.
– Check the motor fan.

Acknowledge / Stop: not required / STOP VII

815 Heatsink temperature, pre–alarm

Cause: The heatsink temperature of the power section is sensed using a thermosensor on the main heatsink. If the overtemperature condition remains, then the drive shuts down after approx. 20 s.

Remedy: Improve the drive module cooling, e.g. using:
– Higher airflow in the switching cabinet, possibly cool the ambient air of the drive modules
– Avoid many acceleration and braking operations which follow quickly one after the other
– Check that the power section for the axis/spindle is adequate, otherwise use a higher–rating module
– Ambient temperature too high (refer to the Planning Guide)
– Permissible installation altitude exceeded (refer to the Planning Guide)
– Pulse frequency too high (refer to the Planning Guide)
– Check and, if required, replace the fan (external fan for 300/400 A module)
– Maintain the minimum clearance above and below the power section (refer to the Planning Guide)

Acknowledge / Stop: not required / STOP VII

816 Resolver sensing at its limit

Cause: At run–up, the speed with an existing resolver evaluation was extremely high. It is possible that this was not the actual speed, and that the resolver was not connected to the measuring circuit input.

Remedy: Insert the measuring circuit connector and enter a reset.

Acknowledge / Stop not required / STOP VII

829 PROFIBUS: Illegal parameterization received

Cause: An illegal parameterizing frame was received via PROFIBUS. Cyclic data transfer cannot start.

Causes:

– The parameterizing frame is inadmissibly long. – The parameterizing frame has an illegal structure.
– Selection of synchronous operation without having inserted a suitable option module (P–875=4).
– Illegal clocks or clock combinations have been parameterized for synchronous mode.

Remedy: Check the bus configuration at the master, and if required correct the parameterization.

Acknowledge / Stop not required / STOP VII

830 PROFIBUS: Illegal configuration received

Cause: An illegal configuration frame was received via PROFIBUS. Cyclic data transfer cannot start.

Causes:

– More axes were configured in the master than are actually physically available in the power section.
– The number of axes configured in the master is not equal to the number of axes activated via P0875.
– The received configuration frame is incomplete.
– It was not possible to determine a legal PPO type from the configuration frame.
– Calculated I/O lengths are inconsistent (internal error).

Remedy: Check the bus configuring at the master and if required, select a permissible PPO type.

Acknowledge / Stop not required / STOP VII

831 PROFIBUS is not in the data transfer condition

Cause: The PROFIBUS is not in a data transfer status (data exchange) or data transfer was interrupted.

Causes:

– The master has not yet run up, or has not yet established a connection to the slave.
– The bus addresses differ in the master configuring and slave parameterization.
– The bus connection has been physically interrupted. – An illegal configuration was received.

Remedy: Master, check the assignment of bus addresses and bus connection.

Acknowledge / Stop not required / STOP VII

832 PROFIBUS not clock–synchronous with the master

Cause: The PROFIBUS is in a data transfer status (data exchange) and has been selected via the parameterizing frame of synchronous operation. It could not yet be synchronized to the clock preset by the master resp. to the master sign–of–life.

Causes:

– The master does not send an equidistant global control frame although clock synchronism has been selected via the bus configuration. – The master increments its sign–of–life (STW2 Bits 12–15) not in the configured time frame Tmapc.

Remedy: Check master application and bus configuration

Acknowledge / Stop not required / STOP VII

864 Parameterization error in speed controller adaptation

Cause: The upper adaption speed (P1412) was parameterized with a lower value than the lower adaption speed (P1411).

Remedy: P1412 must contain a higher value than P1411.

Acknowledge / Stop not required / STOP VII

865 Invalid signal number

Cause: The signal number for the analog output is not permissible.
An analog value can be output for diagnostics–, service– and optimization tasks (terminal 75.x/15, 16.x/15, DAU1, DAU2).

Remedy: Enter a valid signal number (refer to the SIMODRIVE 611 universal Description of Functions).

Acknowledge / Stop not required / STOP VII

866 Parameterizing error, current controller adaptation

Cause: For the current controller adaptation, the upper current limit (P1181) was parameterized with a lower value than the lower current limit (P1180).
Adaptation is de–activated when the parameterizing error is output.

Remedy: P1181 must contain a higher value than P1180.

Acknowledge / Stop not required / STOP VII

867 Generator mode: Response voltage > shutdown threshold

Cause: The sum of the values in P1631 + P1632 is greater than the value in P1633.

Remedy: Appropriately change P1631, P1632 and P1633.

Acknowledge / Stop not required / STOP VII

868 Generator mode: Response voltage > monitoring threshold

Cause: The input value for the threshold voltage (P1631) is greater than the value in P1630.

Remedy: Change the drive parameters.

Acknowledge / Stop not required / STOP VII

869 Reference point coordinate limited to modulo range

Cause: The reference point coordinate is internally limited to the modulo range.

Remedy: Enter a value in P0160 which lies within the modulo range (P0242).

Acknowledge / Stop not required / STOP VII

870 Jerk: jerk time is limited

Cause: When calculating the jerk time T from the acceleration a and the jerk r, the result was an excessively high jerk time, so that the time is limited internally.
The following is valid: T = a/r, where a: Acceleration (higher value from P0103 and P0104) r: Jerk (P0107)

Remedy: – Increase jerk (P0107)
– Reduce maximum acceleration (P0103) or maximum deceleration (P0104)

Acknowledge / Stop not required / STOP VII

871 Induction motor operation: drive converter frequency motor not permissible

Cause: In induction motor operation (selected by P1465 < P1146), drive converter frequencies of 4 or 8 kHz are permissible.

Remedy: – change P1100
– cancel induction motor operation (P1465 > P1146)

Acknowledge / Stop not required / STOP VII

875 Axial deviations in fixed voltage

Cause: For the axes of a drive module, an unequal fixed voltage (P1161) has been set. As a fixed voltage <> 0 replaces the DC link voltage measured value, but the DC link voltage is only measured once for all drives of a drive module, the fixed voltage on all module axes must be equal, before it is accepted.

Remedy: Set the same fixed voltage (P1161) on all module axes.

Acknowledge / Stop not required / STOP VII

876 Input Ix.x assigned function >=50

Cause: Only function numbers less than 50 may be used in the operating mode ”speed / torque setpoint”.

Remedy: Change P0700 (operating mode) or enter a function number less than 50 in P0660, P0661 etc.

Acknowledge / Stop not required / STOP VII

877 Output Ox.x assigned function number >= 50

Cause: Only function numbers less than 50 may be used in the operating mode ”speed / torque setpoint”.

Remedy: Change P0700 (operating mode) or enter a function number less than 50 in P0680, P0681 etc.

Acknowledge / Stop not required / STOP VII

878 Input I0.x not parameterized as equivalent zero mark

Cause: When entering an external signal as zero mark equivalent (P0174 = 2) the input terminal I0.x must be assigned the ”zero mark equivalent” function (fct. No.: 79).

Remedy: Set P0660 to 79.

Acknowledge / Stop not required / STOP VII

879 Time constant deadtime, speed feedforward control (P0205:\%u) too high

Cause: P0205 may not exceed two position controller cycles (s. P1009). Higher values will be internally limited.

Remedy: Reduce P0206 to a maximum of two position controller cycles. An additional delay can be parameterized via P0206.

Acknowledge / Stop not required / STOP VII

881 PZD config.: illegal signal no. in P0915

Cause: An undefined or illegal signal number in the current operating mode (P0700) was identified for the process data software.

Remedy: Correct P0915:17

Acknowledge / Stop not required / STOP VII

882 PZD config.: illegal double word signal no. in P0915

Cause: For signals with double words (length = 32 bits), the corresponding signal identifier must be configured twice for adjacent process data. The following subparameter must therefore also be parameterized with the same signal number.

Remedy: Correct P0915:17

Acknowledge / Stop not required / STOP VII

883 PZD config.: illegal signal no. in P0916

Cause: An undefined or illegal signal number in the current operating mode (P0700) was identified for the process data software.

Remedy: Correct P0916:17

Acknowledge / Stop not required / STOP VII

884 PZD config.: illegal double word signal no. in P0916

Cause: For signals with double words (length = 32 bits), the corresponding signal identifier must be configured twice for adjacent process data. The following subparameter must therefore also be parameterized with the same signal number.

Remedy: Correct P0916:17

Acknowledge / Stop not required / STOP VII

885 P1261 greater than 100.0 % not permissible

Cause: P1261 greater than 100.0 % is not permissible for permanent–magnet synchronous motors with field weakening (PE spindle, P1015 = 1). It is internally limited to 100.0 %.

Remedy: Set P1261 to max. 100.0 %.

Acknowledge / Stop not required / STOP VII