

www.DanaherMotion.com

SERVOSTAR® 300

Quickstart, drive test

Version 04.2006

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Keep all product manuals as a product component during the life span of the product.
Pass all product manuals to future users/owners of the product.



Preparation

The CD-ROM delivered with the servo amplifier contains all the manuals in PDF format and the setup software. Insert the CD-ROM into a free drive of your PC.

Autostart function activated: A window with the start screen opens.

Autostart function deactivated: Click START (task bar), then on Run. Enter the program call: x:\autorun.exe (x = CD drive letter). Click OK. The start screen opens.

Install Setup Software

Multilanguage CD-ROM: On the start screen you find a link to the setup software:

Install Setup Software SERVOSTAR S300 Release __. __ Build __

Click it and follow the instructions from here.

North American CD-ROM: Click the product name, then select ***Install Software*** from the next screen. Follow the instructions from here.

Documents

You need Acrobat Reader to read the PDFs (installation link on every screen).

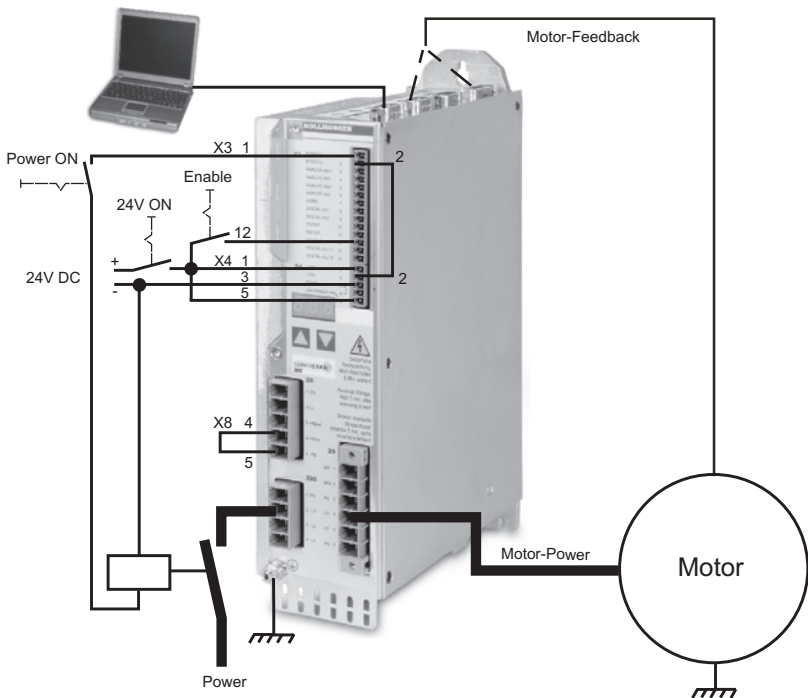
Multilanguage CD-ROM: Select the language version on the start screen of the CD-ROM. Click "Servo Drives" in the column "Technical Manuals". A table with links to all manuals appears.

North American CD-ROM: Click on any manual title automatically brings up the document.

Mechanical and Electrical Installation of the Servo Amplifier

1. Unpack servo amplifier and accessories
2. Keep the product manual ready (print if necessary)
3. Keep the setup software manual ready (print if necessary)
4. **Observe safety instructions in the manuals**
5. Mount the servo amplifier as described in the product manual
6. Wire the servo amplifier as described in the product manual or apply the minimum wiring for drive test (see next page)

Minimum Wiring for Drive Test



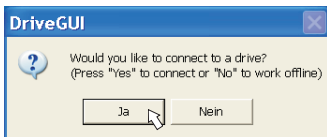
Connect

- Connect the interface cable to a serial interface on your PC and to the serial interface X6 of the servo amplifier. USB to serial converter can be used optionally.
- Switch on the 24 V power supply for the servo amplifier.
- Wait about 30 seconds, until the front display of the servo amplifier displays the current class (e.g. 03 for 3 amps). If the power supply voltage is switched on, too, a leading P is displayed (e.g. P03 for Power, 3 amps).

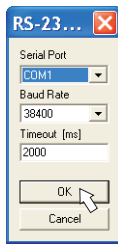
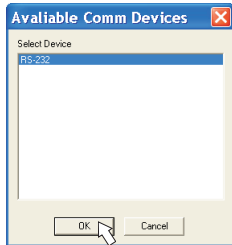
If an error code (F__) or a warning (n__) or a hint (./_ / E/S/A) appears in the display, you will find the description in chapter 9.4 respectively 9.5 of the installation manual. If there is fault, fix the problem.



Double-Click the DriveGUI.exe icon on your Windows desktop to start the software.



You can work offline or online with DriveGUI.exe.
Work ONLINE now.



If the communication is started for the first time, you have to setup the communication parameters. Choose the communication system and the interface, where the servo amplifier is connected to. Click OK.

The software tries to communicate with these parameters. If it's not successful, you receive this error message:



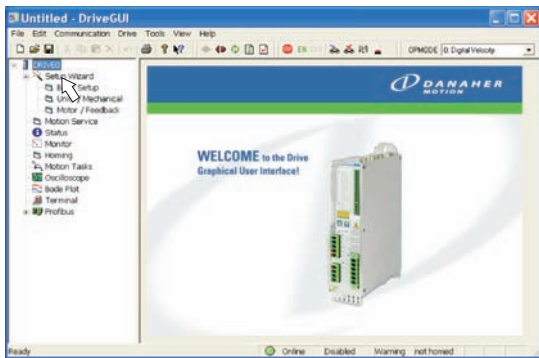
Frequent causes:

- wrong interface chosen
- wrong connector chosen at the servo amplifier
- interface is used by another software
- 24 V auxiliary voltage for the servo amplifier not working
- interface cable broken or wrong wiring

Quit the error message. The software starts in the offline mode now, that requires the manual selection of the amplifier's type. Quit this selection by closing the window.

Fix the communication problem. Restart the software in Online mode.

If communication works, you see the start screen.




Select "**Setup Wizard**" in the navigation frame.

Important Screen Elements


Help Function


The Online-Help gives detailed information to all parameters the servo amplifier can work with.

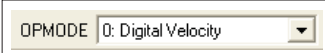
Key F1	Starts Online Help for the actual screen page.
Menu bar ?	Starts Online Help with the first page.
	Context Help. Click the help symbol first. Then click the function for which you need help.

Tool Bar



	Save to EEPROM, required if you changed parameters.
----------------------------------------------------------------------------------	-----------------------------------------------------

	Reset, required if you changed important basic parameters.
----------------------------------------------------------------------------------	------------------------------------------------------------

	Operation Mode, use Digital Velocity mode for drive testing.
----------------------------------------------------------------------------------	--------------------------------------------------------------

Status Bar



The status bar shows a green Online symbol, indicating that the communication works.

Setup Wizard

The Setup Wizard leads you through the necessary steps for configuring your servo amplifier. Depending on the selected application, only the active screen pages are necessary.



For a quick setup select the setup type "Quick Motor/Drive Setup".

Start the Wizard.

Basic Setup

Power Supply

Regen Resistor

Internal Value Ohms

External

max. Regen Power W

Mains Voltage V

Response to Loss of Input Phase

Amplifier

Hardware

Firmware

Serial Number Run Time h Name

Set Software-Enable on Bootup

Next >

Regen Resistor

Change only, if you use an external regen resistor. Most applications don't need a regen resistor

Mains voltage

Select the nominal mains voltage

Response to Loss of Input Phase

Select Single-Phase or Three-Phase operation. With three-phase operation you can select either warning "n05" or error "F19" in case of phase loss. The reaction "error" disables the output stage, a warning is just a message.

Name

You can enter a name for the servo amplifier (up to 8 characters).

Click **NEXT**.

Units/Mechanical

The screenshot shows a software interface for configuring units and mechanical conversion. It is divided into two main sections: 'User Units' and 'Mechanical Conversion'. The 'User Units' section contains three dropdown menus: 'Position' set to 'Counts', 'Velocity' set to 'rpm (Velocity Loop), Counts/s (Position Loop)', and 'Acceleration' set to 'rpm/s'. The 'Mechanical Conversion' section features a 'Resolution =' label followed by two input fields. The first field contains '10000' and is labeled 'Counts', and the second field contains '1' and is labeled 'Motor Revs'. At the bottom right of the interface are two buttons: '< Previous' and 'Next >'.

The user units for all input fields in the setup software can be preselected here.

Position, Velocity, Acceleration

Select usable units for your application referring to the moved load.

Mechanical Conversion

The relationship between motor shaft revolution (pole pitch with linear motors) and motion distance of the load is defined here. Gear ratio can be calculated here as well. Detailed information can be found in the context help.

Click NEXT.

Motor (rotary) / Feedback - linear motor see next page

Feedback			
Type 0 Resolver - connector X2			
Motor			
Select from Database...	No. 276	Name DBL3H00065	Continuous Current 1.08 A
Type 1: PM Rotary Motor	Brake without	Peak Current 5 A	Maximum Speed 6000 rpm
Calculated Quick Tuning			
Load-to-Motor Inertia Ratio 0	Desired Servo Performance <input type="radio"/> Gentle <input checked="" type="radio"/> Medium <input type="radio"/> Stiff <input type="radio"/> Do not tune		
< Previous		Next >	

Simplified setting of the motor related parameters.

Feedback: Select the feedback system used in the motor.

Attention: Resolver is fixed to 2 pole in the Quick Motor/Drive Setup.

Change "pole n" on feedback screen in Complete Setup later, if required.

Motor type: Click the button "Select from Database...".

Open the database file (mdb_ __.csv) and select the used motor out of the list.

Brake: If the amplifier shall control a brake, change the Brake parameter to "With"

Calculated quick tuning: If you know the Load-to-motor inertia ratio, enter this number here and select the desired servo performance. If you don't know the inertia ratio, select "Do not tune".

Click **FINISH**.

Motor (linear) / Feedback - rotary motor see previous page

Feedback

Type: 4 Sine Enc. EnDAT - connector X1 Encoder Lines: 1000 Calculate...

Motor

Select from Database... No. 21003 Name IL12-030A1 (230V) Continuous Current 2.3 A

Type: 2 PM Linear Motor Brake: without Peak Current 7.1 A

Maximum Speed 10000 rpm

Calculated Quick Tuning

Load-to-Motor Inertia Ratio: 0

Desired Servo Performance: Gentle Medium Stiff Do not tune

< Previous Finish >>

Calculate ENCLINES for line...

Motor pole-pair pitch: 32000 μm

Encoder signal period: 0.1 $\mu\text{m}/\text{cycle}$

Cancel Calculate ENCLINES and Return

Simplified setting of the motor related parameters.

Feedback: Select the feedback system used.

Motor type: Click the button "Select from Database..."

Open the database file (mdb_*.csv) and select the used motor out of the list.

Encoder Lines (appears with Feedback Type Sine Encoder):

Click "Calculate" and fill in the Encoder signal period.

Brake: If the motor has a built-in brake, change the Brake parameter to "With"

Calculated quick tuning: If you know the Load-to-motor inertia ratio, enter this number here and select the desired servo performance. If you don't know the inertia ratio, select "Do not tune".

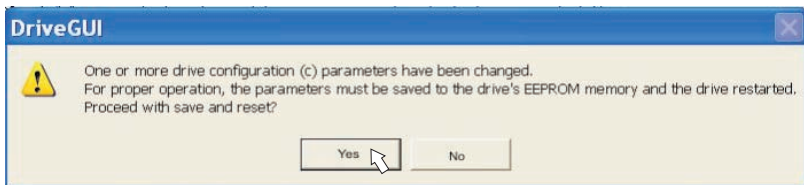
Click **FINISH**.

Save Parameters and Restart

You are going to finish the Setup Wizard and you have changed several basic parameters. Depending on the parameters you changed, two possible reactions will occur now:


Important parameters changed

A warning appears, that you have to restart the amplifier, this is called "coldstart".



Click "YES". The parameters are saved to the amplifier's EEPROM automatically and a reset command restarts the amplifier .

Minor important parameters changed

No warning appears. Save the parameters to the EEPROM of the servo amplifier manually by clicking the symbol  in the tool bar. A coldstart of the amplifier is not necessary.

Select the screen "**Motion Service**" in the navigation frame.

Motion Service (Jog Mode)

Be aware that the actual position of the load permits the subsequent moving operations. The axis could move to the hardware limit-switch or the mechanical stop. Make sure that a jerk or a fast acceleration of the load cannot cause any damage.

- Switch on the power supply for the drive.
- Enable the servo amplifier (+24 V to inputs AS-Enable [X4/5] and then to Enable [X3/12], this sequence is important!), the front display shows an E and the current class (e.g. E03 for Enable, 3 amps)

The screenshot shows the drive's front display interface with three sections:

- Jog (Digital Velocity Mode):** Features a jog button with a mouse cursor, a minus sign button, and a text input field containing '100 rpm'.
- Jog (Position Motion Tasks Mode):** Features a plus sign button, a minus sign button, and a text input field containing '10000 Counts/s'.
- Actual Values:** Contains two rows: 'Position' with a value of '3259 Counts' and 'Velocity' with a value of '-0.023 rpm'.

Jog (Digital Velocity Mode):

You can move the drive with constant speed. Enter the desired speed.

Observe the "safe reduced speed" requirements for your application!

The drive moves with the preset speed when the + or – button is pressed. It stops when the button is released.

Now you have setup the basic functions of the drive successfully.

More Setup Screens

Observe the safety instructions in the manuals when you change parameters in the additional setup screens.

For all setup functions detailed information can be found in the Online Help system and the integrated command reference. Select "Complete Setup" in the Setup-Wizard. Now you have access to:

- **Feedback:** Adjust the used feedback unit
- **Motor:** Adjust the used motor
- **Control Loops:** Current-, Velocity- and Position-Loops can be optimized
- **Position Data:** Adjust the position control for the requirements of your application.
- **Position Registers:** up to 16 position values in the motion way can be monitored.
- **Electronic Gearing:** If the servo amplifier will follow a setpoint as a slave with a gear ratio, you can select the gearing source here and define the gear ratio.
- **Encoder Emulation:** select the encoder emulation (position output)
- **Analog I/O:** setup the analog inputs
- **Digital I/O:** setup the digital inputs and outputs
- **Status:** displays amplifiers data with fault history
- **Monitor:** displays the drive data (actual values)
- **Homing:** definition and start of homing
- **Motion task:** definition and start of motion task
- **Oscilloscope:** 4 channel oscilloscope with multiple functionality
- **Bode Plot:** tool for optimizing the drive
- **Terminal:** setup the servo amplifier with ASCII commands
- **Expansion Card:** depending on the built-in expansion card a menu appears

Documents

You need access to these documents (located on the product CD-ROM, you can download the latest editions from our website):

- Assembly, Installation, Setup SERVOSTAR 300 Manual (Product Manual)
- Setup Software DriveGUI.exe for SERVOSTAR 300 Manual
- CANopen communication profile for SERVOSTAR 300 Manual

Depending on the installed expansion card you need one of these documents:

- PROFIBUS DP communication profile for SERVOSTAR 300/400/600 Manual
- DeviceNet communication profile for SERVOSTAR 300/600 Manual
- SERCOS communication profile for SERVOSTAR 300/400/600 Manual
- EtherCat communication profile for SERVOSTAR 300/600 (in process) Manual

You need Acrobat Reader to read the PDFs, an installation link is on every screen of the product CD-ROM.

Technical changes which improve the performance of the equipment may be made without prior notice!

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