

SERVOSTAR® 640 / 670

Quickstart Guide

Version 12.2010

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

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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 your PC.

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

Autostart function deactivated: Click START (task bar), then on Run. Enter x:\index.htm or 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 S400/S600 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.

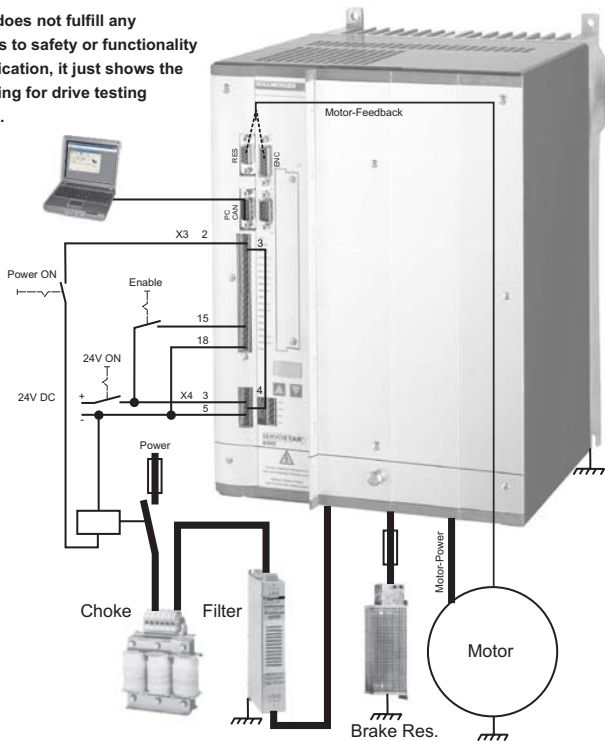
North American CD-ROM: Click on any manual title automatically brings up the document.

Mechanical and Electrical Installation of the Servo Amplifier



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



Minimum Wiring for Drive Operation

This wiring does not fulfill any requirements to safety or functionality of your application, it just shows the required wiring for drive testing without load.



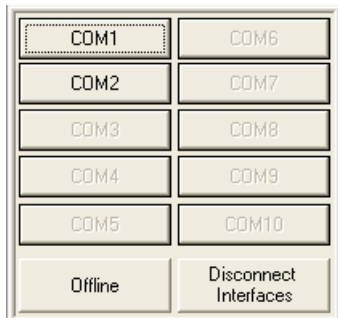
Connect

- 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 logic power supply for the servo amplifier.
- Wait about 30 seconds, until the front display of the servo amplifier displays the current rating (e.g.  for 40 amps). If the mains power supply voltage is switched on, too, a leading P is displayed (e.g.  for Power, 40 amps).

If a fault code () or a warning () or a status message (".", "_", "E" or "S") appears in the display, you will find the description and hints for trouble shooting in the instructions manual. If there is fault, fix the problem.



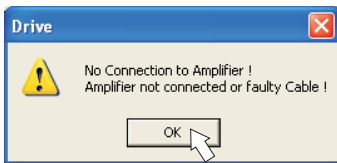
Double-Click the Drive.exe icon on your Windows desktop to start the software.



You can work offline or online with Drive.exe.

Work ONLINE now. Select the interface where the servo amplifier is connected to.

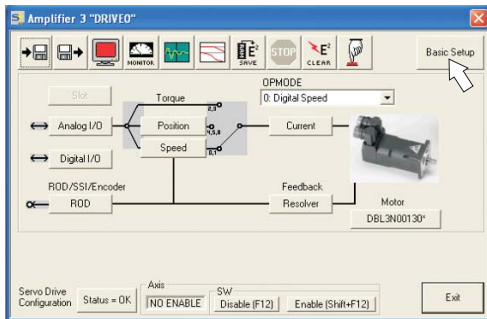
The software tries to communicate with the drive and to upload the parameters. If it's not successful, you receive this error message:



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

Click OK to remove the error message. Detect and remove the error source. Restart the software. If communication works, parameters are transmitted from the servoamplifier to the computer. Then you see the start screen.



Make sure, that the amplifier is disabled (Input HW-Enable connector X3 pin 15 must be 0 V or open)!

Important Screen Elements

Help Function


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

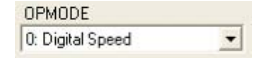
Key F1	Starts Online Help for the actual screen page.
Menu Bar ? / Online HTML Help	Starts Online Help with table of contents.

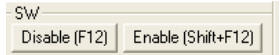
Tool Bar



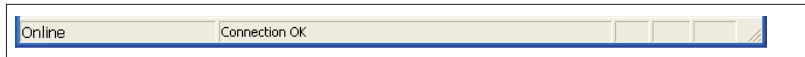
	Save to EEPROM, required if you changed parameters.
--	--

	Reset (coldstart), required if you changed important configuration parameters.
--	---

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

	Disable and Enable of the amplifier's output stage via software.
--	--

Status Bar



Basic Setup

On the start screen click "Basic Setup" button.

Basic Setup 3 "DRIVE0"

PC Software
V5.53 KS283

Power Supply
Regen Resistor
Extern
max. Regen Power
3000 W
max. Mains Voltage
400 V
Mains Phase missing
Warning

Amplifier
Hardware
Drive 40A Hardware Version 26.00
Firmware
V5.99 DRIVE Rev create.d Mar 09 16:20:19 2005

Serial Number	Address	Field Bus Address	Baud Rate CAN Bus
730233484	3	0	500 kBaud

Run Time	Name	Auto Enable	Ext. WD
4518:6 h	DRIVE0	On	100

Units
Acceleration
ms->VLIM / VCMD
Velocity
Compatibility mode
Position
incr.

OK Cancel Apply

Regen Resistor: Select "external" regen resistor

max.Regen Power: Fill in the power of the connected regen resistor.

max. Mains Voltage: Select the nominal mains AC voltage

Mains Phase Missing: You can select either warning "n05" or error "F19" in case of phase loss. The setting "F19" disables the output stage, "n05" is just a message.

Units: Acceleration, Velocity, Position

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

Leave all other fields unchanged.

Click OK. On the start screen, click "Motor" button.

Motor (synchronous)

Motor 3 "DRIVE0"

Motor Type: Synchronous Motor Motor Unit: rpm

I_o : 1 A No. of Poles: 6

I_o max: 4.5 A L: 61 mH

Max. Speed (n max): 6000 rpm

Number - Name: [] Holding Brake: without

Current Advance [° elect.]: 0

Limit Phi [° elect.]: 20

Start Phi [rpm]: 1500

Buttons: Load Data from Disk, OK, Cancel, Apply

Press function key F12 (Software Disable).

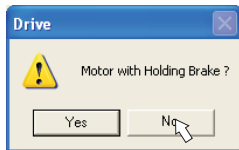
Motor Type: Select Synchronous Motor. If you use a linear motor or an induction motor, please contact our support department.

Number-Name: Click the list to start uploading the motor parameter table, which is stored in the servo amplifier. Search and select the connected motor. If your motor is not listed, please contact our support department.

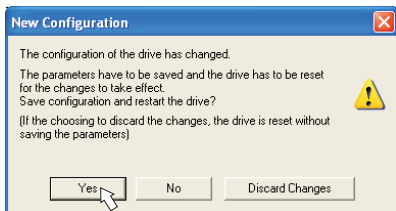
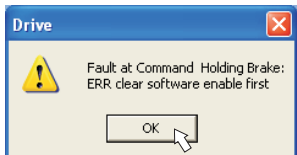
Leave all other fields unchanged.

Click OK.

If your motor has a built-in brake, click Yes, otherwise "No".



If Software Enable is active, a warning appears. You can proceed, but after the amplifier is restarted, you must check whether the holding brake configuration is correct. Click OK.

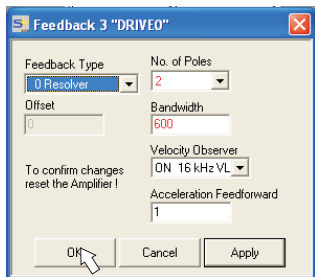


Parameters are uploaded to the amplifier's RAM now (takes some seconds). When this is done, you have to accept the changed configuration with "Yes" or to discard the changes in the appearing screen.

If you click "Yes", the parameters are saved in the EEPROM and the amplifier makes a coldstart (reset). This takes some seconds.

On the start screen, click "Feedback" button.

Feedback



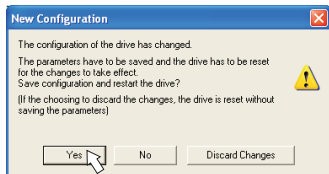
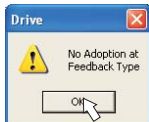
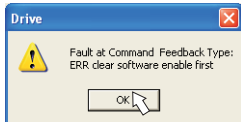
Press F12 (SW disable) before changing feedback parameters.

Feedback Type:

Select the feedback type used.

Leave all other fields unchanged.

If Software Enable is active, a warning appears. The configuration change cannot be performed. Click OK on the warnings, press F12 (SW disable) and start the Feedback procedure again.



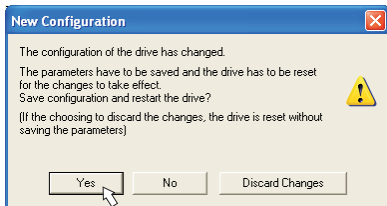
If everything was ok, the same procedure (parameter upload) that has been described for the motor selection starts.

If you click "Yes", the parameters are saved in the EEPROM and the amplifier makes a coldstart (reset). This takes some seconds.

Save Parameters and Restart


You are going to finish setup and you have changed several basic parameters. Depending on the parameters you changed, two possible reactions can occur:

Configuration 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 (takes a few seconds). For example, this happens after motor or feedback selection.

Other parameters changed

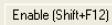


No warning appears. Parameters are saved in the volatile RAM only. Save the parameters to the EEPROM of the servo amplifier manually by clicking the symbol  in the tool bar. A coldstart of the amplifier is not necessary.

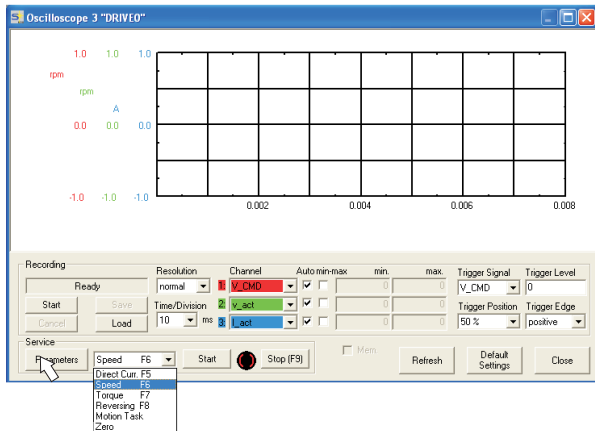
Reset the amplifier

You can reset the amplifier manually (e.g. in case of an error). Click icon 

Jogging the Motor (Speed Control)

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.
- **Hardware-Enable:** +24 VDC to Enable [connector X3 pin 15].
- **Software-Enable:** Click the "Enable" button  on the start screen or use key combination Shift+F12. Now, the front display shows an E and the current rating (e.g.  for Enable, 40 amps)
- Click the icon "Oscilloscope"  :



- Select Service-Mode "Speed F6", then click "Parameter" button

Parameter

Input Service Parameters

Speed: 100 rpm

Torque: 0 A

Const Direct Current Setpoint: 0 A

Electr. Angle: 0 °

Motion Task No.: 1

Reversing Mode

Graph: v (rpm) vs. t (ms). Step function from v1 to v2 at t1, return to 0 at t2.

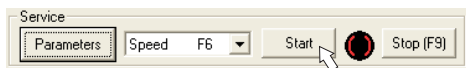
v1: 100 rpm, v2: -100 rpm, t1: 1000 ms, t2: 1000 ms

Buttons: OK, Cancel, Apply

- Enter a safe speed. The sign defines the direction of movement.
Observe the "safe reduced speed" requirements for your application!

- Click OK.

- Start the service function ("Start" button or press F6).
Click OK on the warning notice.



Opmode is switched to "0" and the output stage is enabled automatically. The symbol's color changes to green as long as the function is active.

- **The function is active until you click the "Stop" button or press F9.**
- The output stage can be disabled by pressing function key F12.

Status

Actual warnings and errors are listed on the **Status** screen, which can be accessed on the start screen by clicking the "Status" button. This button monitors the current status of the amplifier and can appear with different text.

The image shows two overlapping software windows. The left window, titled "Amplifier 3 DRIVED", is in "Basic Setup" mode and displays a block diagram of the drive system. It includes sections for "Analog I/O", "Digital I/O", "R0D/SSI/Encoder", and "R0D". A central "DPMODE" section shows "0. Digital Speed" selected. A "Motor" section identifies the motor as "D8L3N00130". At the bottom, there are buttons for "Servo Drive Configuration", "Status" (with a mouse cursor), "OK", "Axis [FNO ENABLE]", "Slw [Disable (F12)]", "Enable (Shift+F12)", and "Exit". The right window, titled "Drive Status 3 DRIVED", shows the "Status" screen. It displays "Run Time" as 4518:39. Below is a "Fault History" table with columns for "Fault", "Time", and "Frequency".

Fault	Time	Frequency
F04 Feedback Loss	4518:29	F01 Heat Sink Temp. 1
F04 Feedback Loss	4517:30	F03 Following Error 1
F04 Feedback Loss	4517:30	F04 Feedback Loss 91
F16 Mains BTB/BTO	4517:30	F05 Undervoltage Cond. 24
F05 Undervoltage Cond.	4517:30	F06 Motor Temperature 61
F04 Feedback Loss	4517:30	F08 Overspeed Condition 6
F16 Mains BTB/BTO	4517:30	F11 Brake 7
F05 Undervoltage Cond.	4517:30	F16 Mains BTB/BTO 37
F04 Feedback Loss	4517:30	F19 Mains Phase 1
F04 Feedback Loss	4517:37	F25 Commutation Error 3

Below the table are sections for "Actual Errors" and "Actual Warnings", both showing "No". At the bottom right are "Reset" and "Cancel" buttons.

The Reset button can be used to clear some actual error messages. A description of errors/warnings can be found in the online help.

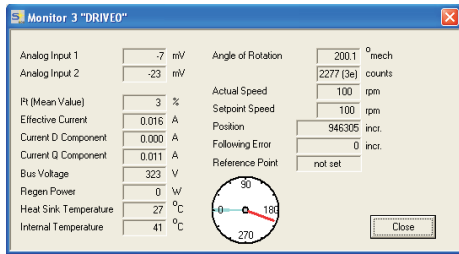
Now you have setup and tested the basic functions of the drive successfully.

Additional Setup Parameters

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

Detailed information on all setup functions can be found in the Online Help system and the integrated command reference.

Monitor



Click the icon "Monitor"



The Monitor screen shows all important electrical and mechanical actual values.

Documents

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

- Instructions Manual (Assembly, Installation, Setup)
- CANopen communication profile

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

- PROFIBUS DP communication profile
- DeviceNet communication profile
- SERCOS communication profile
- EtherCAT communication profile

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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