

**Commissioning**  
an  
**Fault - finding**  
on  
**Digital Servo Drives DS 205 ... 475**



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Version 040804-V76

**Contents****Commissioning**

Safety Precautions  
Settings and Parameters  
Speed Control optimisation  
Position Control optimisation  
Control Systems

**Fault Finding**

PC faults  
Drive faults

**Attention:**

This Commissioning Manual can only be used in conjunction with the device Hardware Manual and Unitek software *DRIVE* (vers. > 60).

**Parameter File handling:**

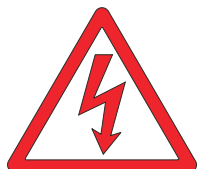
Parameter files (\*.utd) created with *DRIVE* (vers. < 60) can still be loaded with the latest software. Remember to check through the values and add in any which are missing. When saving, give the upgraded file a new name, for example myname-2.utd.

**Oscilloscope Values**

Oscilloscope files (\*.uto) created with vers. < 60 will be displayed with the latest software, but with incorrect channel labels

**Safety Symbols:**

WARNING  
Potentially Fatal  
High Voltage!



Attention  
Warning  
Important



## 2 Software

### Safety

This Manual provides general rules for the commissioning (including parameter entry) of Unitek digital Drives and Amplifiers. (Software *DRIVE-2* vers. > 60)

The commissioning procedure may vary depending on the machine or equipment into which the device is being installed.

#### The user must ensure that if :

- the device loses power
- wrong operation
- the device loses its controlling ability



the controlled axis will be guided to a safe halt.

Machines and equipment must be fitted with device-independent monitoring and safety systems. No risk to personnel or property may exist.

### Set-up and Programming

- may only be attempted by specialist personnel with Electronic Drive and Software experience.
- Programming instructions must be followed.
- Safety Standards must be adhered to.

#### Strict adherence to Safety Directives during commissioning is paramount.

Axes travelling within restricted pathways must do so with monitoring systems engaged.

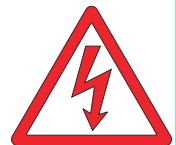
Ensure that the relevant laws and technical regulations are adhered to.

- EU-Guidelines 89/336/EWG, 72/23/EWG, 89/37/EWG  
EN60204-1, EN 292, EN 50178, EN60439-1, EN61000-2, EN61000-4
- IEC/UL IEC364, IEC 664, UL508C, UL840
- VDE-regulation VDE 100, VDE 110, VDE 160 and
- TÜV-regulation
- Professional Body regulations VGB4

Open Electrical Cabinet operation is only allowed during the commissioning of equipment by specialist personnel.

It should be noted that even where a device is not functioning, the connected Control System and Mains Power Supplies will continue to present active voltages.

DC Bus Voltage discharge time is greater than 4 minutes. Check the voltage before disassembly!



### CE

It is forbidden to operate a machine or equipment until it has been established that the machine or equipment is in accordance with EU machine guidelines 89/392/EWG and EMI guidelines 89/336/EWG.

The advice given in the EMI chapter of the device Hardware Manual is within the EU guidelines 89/336/EWG and the EMI-Standards EN61000-2 and EN61000-4.

A manufacturer's declaration can be obtained.

### Basics!

The device is mechanically mounted and electrically connected.  
 The PC serial port (COM1 or COM2) is connected to the device serial port (labelled RS232) using a null modem cable.  
 The Power Supply Voltage (30 to 480V~) is switched off.  
 The 24V= is switched off.  
 The Drive-Enable relay (labelled RUN) is open, or definitely switched off.  
 The device independent monitoring systems are enabled.

### Set-up and Parameters

Action	Outcome
Switch on the PC and call up the <b>DRIVE-2</b> program by double clicking on the icon.	The main window appears with the title, symbol and menu lists. Error window: <b>OFFLINE</b>
Click the <b>online</b> box.	Online Mode. Error window: <b>NOREPLY</b> No RS232 connection or 24V= not present
Switch on the 24V=.	Error window: NOREPLY disappears <b>Error window: POWERVOLTAGE</b> Led indicator <b>VCC</b> illuminated

#### Load an existing parameter program.

Click on File, **Open**, and navigate through the WINDOWS folders to locate a suitable xx.utd file. Double click on the required file name, or click once and click the **open** button. The name of the current file will be displayed in the top left hand corner title bar.

#### Load a program from the device.

In the Para window, click on the **Read All** button.

Action	Outcome
Open the Motor data window by clicking on the <b>M</b> symbol.	Examine the Motor data, and where necessary make changes. Ensure that the feedback device is correctly chosen. (Incremental Encoder or Resolver) The device is updated by clicking on the Send button.
To manipulate the Device Digital inputs/outputs click on the <b>D</b> symbol.	<b>Inputs.</b> Two of the four inputs have been labelled as Limits (Limit switches). Click on the associated down arrow to open up the scroll down menu and select the required function. Select the polarity, active High or active Low. <b>Outputs.</b> Two Digital outputs are available to reflect the state of the device. Use the left-most scroll down menu to associate an internal variable or flag with the output. Use the centre menu to determine the conditions under which the output becomes active. Use the right-most menu in conjunction with the four variable fields to select a comparison value. The device is updated by clicking the Send button.
Select the type of command value source by clicking on the <b>A</b> symbol.	Use the scroll-down menus to make a selection. If the drive is operating in Analog input mode, then two i/p functions are available. The offset of both channels may also be adjusted.

## 2 Getting Started >V60

Action	Outcome
Click on the <b>C</b> symbol to open the Current(I) menu.	Continuous and Peak current values may be examined and when necessary, altered. Further values in this section may only be altered with Factory authorisation.
Click on the <b>S</b> symbol to enter the Speed parameter menu.	Check the values, and alter if required. The device is updated with the Send button.
To open the Position menu click on the <b>P</b> symbol.	Check the values, and alter if required. The device is updated with the Send button.
Click on the <b>!</b> symbol to access the <i>other</i> menu.	Factory authorisation is required to alter some of the parameters in this menu.

### Saving up-dated parameters in the Device

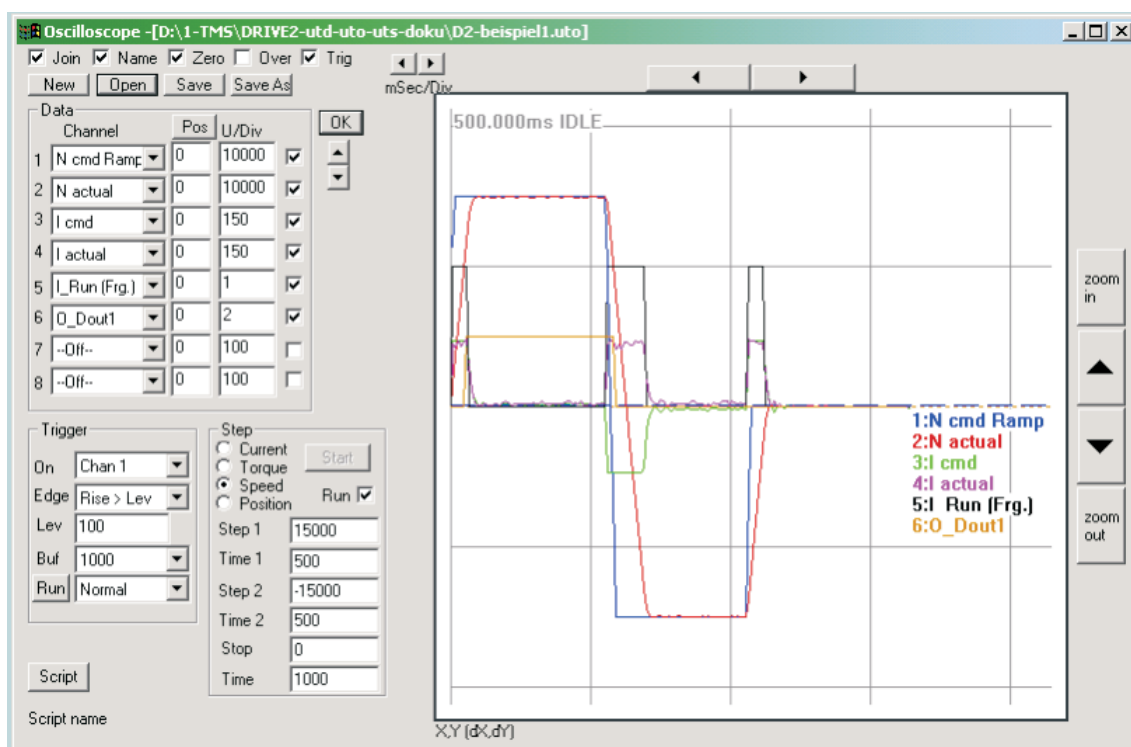
By clicking the **Write All** button, all parameters are transferred from the PC to the device RAM. When the device power is removed, the data in RAM is lost. In order to ensure that the data is not lost, it must be written to non volatile flash EEPROM. This is achieved by clicking the **Write 0** button. Each time the device is powered up it loads it's parameters from EEPROM 0 into RAM.

### Saving the up-dated parameters to PC

To save the current parameter file, click the **disk** icon.

To save to a new parameter file click on the **WINDOWS file** option, select **Save As**, navigate to a suitable folder, give in a suitable file name yyy.utd and click on the save button.

### Oscilloscope View



**WARNING:**

Where possible, the first device run should be carried out with an un-coupled Motor Shaft.

Where an axis is running within limits, it must be ensured that in the event of an operating fault or a commissioning fault, no damage can occur.



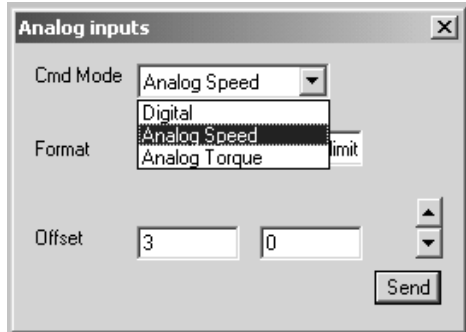
With software *DRIVE-2* (vers. > 60) Oscilloscope channel labels have been changed:

NEW	OLD (<60)
N cmd Ramp	SPEED SOLL
N actual	SPEED_IST
I cmd	I_SOLL
Pos cmd	POS SOLL
Pos actual	POS IST

## 2 Getting Started >V60

### .Analog Command value Set-up

Click the **A** symbol, and select Analog Speed from the drop-down menu.



If necessary add a value in the offset fields.

Ain1 and Ain2 can be assigned to different functions. For example Ain1 can be assigned to be the Cmd input while the value on Ain2 can be added, subtracted or multiplied to the command value.

#### Offset

Ensure the Analog input is set to 0V. Increment the offset value until the Axis is stationary or until the Track Field value **N cmd Ramp** displays zero.

Set the analog input to 0V. From the Speed menu set the **0 cutoff** to an appropriate value.



When the analog input command value reaches this switch-point, the device enters the digital *Hold Position* state. (values 0 ... 100)  
Hold Position  $\pm 100N$

### Analog Input, Speed Set-up

The Speed command (N cmd) and Speed actual (N actual) have a numeric limit of  $\pm 32767$  (100%). An input voltage of  $\pm 10V$  applied to inputs Ain1 or Ain2 will be interpreted by the device as  $\pm 29490$  (90%).

The **Nmax** value in the **Speed** parameter field can be set up to 20% higher than the **Nmax** value in the **Motor** parameter field.

If it is required to overdrive the **motor** at higher speeds, the **Nmax** value in the Motor parameter field must be set to a value greater than that given on the motor nameplate.

#### Speed referencing

Set the analog input command to 1V.

In the **Speed** menu, vary the **Nmax** parameter until the measured speed is 10% of the required maximum.

Now raise the analog input command to 10V.

Measure the speed

Measure the speed. When necessary make small changes to **Nmax** until the desired speed is achieved.

**In the case of CNC / PLC position controller, with a  $\pm 10V$  analog output, it is better for the maximum speed to be achieved with a command value in the region 9 ... 9.5V.**

## Speed Control Optimisation

### Start Point

PC (com1 or com2) connected to the device (connector RS232) using a Null modem cable.

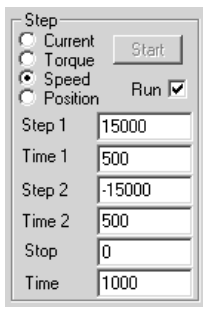
The Power Supply Voltage (30 to 480V~) is switched off.

24V= is switched off.


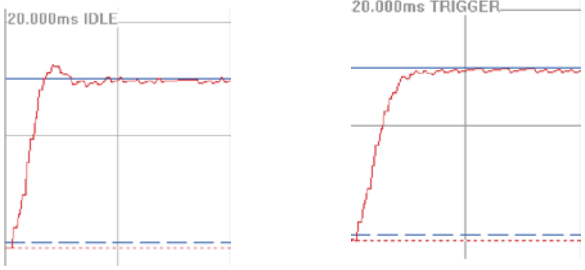
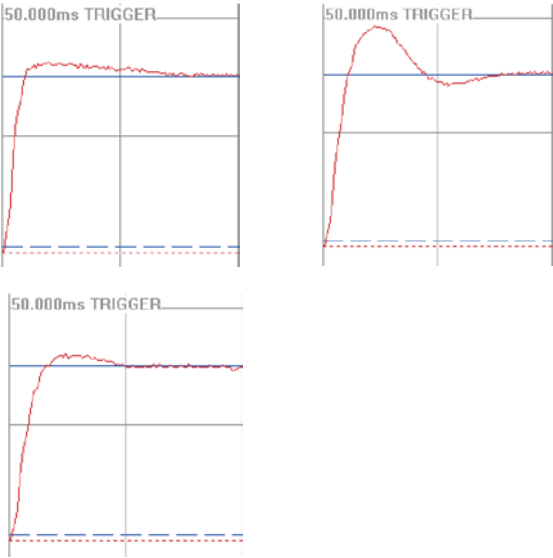
The Drive Enable relay (labelled RUN) is open, or definitely switched off.

The Device independent monitoring systems are enabled.

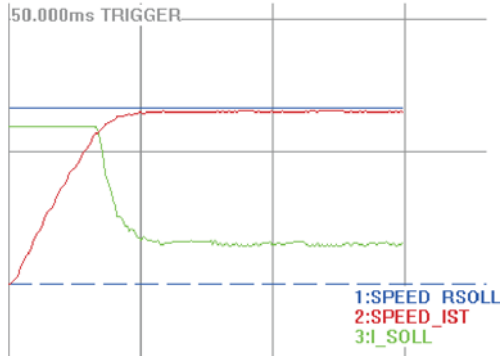
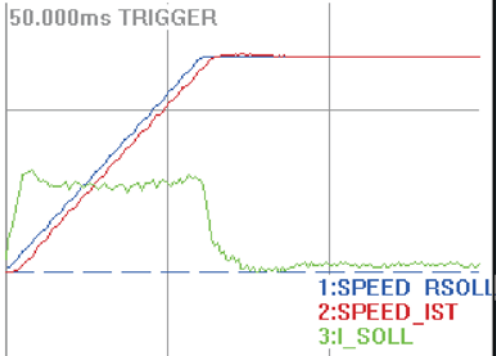
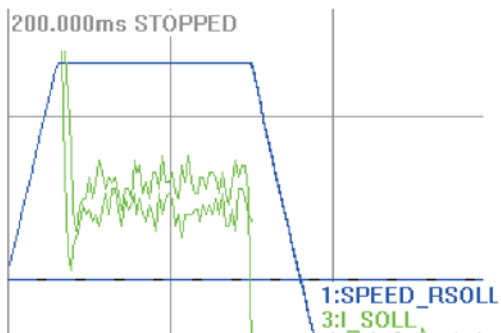
Open the *DRIVE* software. Click on **File, Open**, and navigate through the WINDOWS folders to locate and load a suitable xx.utd file. Alternatively, load the currently active device file by clicking the **Read All** button. Use the WINDOWS File and Save As functions to save the file to PC. Select a suitable folder and file name (xxx.utd)

Action	Outcome
Click on the <b>C</b> symbol to open the Current (I) parameter window.	Continuous and Peak current values may be examined and when necessary, altered. During initial commissioning it is recommended that the Peak current be set to a reduced value. Without factory authorisation, I <sub>max</sub> should be kept below 25% of the Motor parameter field I <sub>max</sub> value. The device is updated by clicking the <b>Send</b> button.
Click <b>S</b> to open the Speed parameter window.	All Speed parameters are open to adjustment to aid in the optimisation. The device is updated by clicking the <b>Send</b> button.
Click on the oscilloscope symbol to access this analytical function.	The oscilloscope, incorporating the Step-Generator function is opened.
Click on Open to re-call an existing oscilloscope set-up file. Navigate using WINDOWS to find a suitable folder and xxx.uto file type.	 <p>The settings for Data, Trigger and Step, as well as the last oscilloscope run will be recalled and displayed. Check through the Step-Generator values. The Step source type <b>must</b> be set to <b>speed</b>. The value range for Step1, Step2 and Stop is 0 to 30000. 30000 corresponds to the N<sub>max</sub> value given in the Motor parameter field. The Time field data is in ms, with a range of 1000 to 99999. Shorter time intervals are dependant on PC cycle time, and subject to a loss of accuracy.</p>
The Oscilloscope Display Window can be moved around the Screen, or enlarged to full screen size.	
Switch on the Power Voltage to the device.	Clear the POWERVOLTAGE error message by clicking the <b>Cancel</b> button in the Error window. The motor must be stationery <b>without any torque</b> at the motor shaft.
Connect up or switch on the Drive Enable signal.	The motor remains stationery but exerts a <b>holding torque</b> at the motor shaft.

# Speed Control Optimisation

Action	Outcome
<p>Having entered new data, or edited existing data in the Step function of the Oscilloscope feature, click on the start button.</p>	<p>The device carries out the Step function.                      The acceleration and deceleration ramps are governed by the Acc and Dec values in the Speed parameter menu.                      If the motor does not follow the Step commands, immediately disable or disconnect the Drive Enable signal.</p> 
<p>Setting the optimal device <b>Proportional</b> term.                      Enter the following Step function:                      Step1 = 3000                      Step2 = 3000                      Stop = 0                      Set all Times = 1000                      In the Speed parameter menu, set Ramp <b>-Acc</b> and <b>Tn</b> to 0.                      Set <b>Kp</b> to 10.                      Increase Kp in a step wise fashion until the response overshoots the command value. Fig.1                      Now reduce Kp until the response is critically damped. Fig.2</p>	<p>Monitor <b>N cmd</b> with channel 1                      Monitor <b>N actual</b> with channel 2</p>  <p>A Proportional-only control term gives rise to a steady state error.</p>
<p>Setting the optimal <b>Integration</b> time.                      Set <b>TnM</b> (The error % available for integral term calculation) to 50%.                      Set <b>Tn</b> to 50. Fig.3                      Using the down-arrow button, gradually reduce <b>Tn</b>. Warning, with values less than 5, oscillation may occur!                      Set <b>Tn</b> so that the response overshoots once and then undershoots once. Fig. 4                      Using the down-arrow button, gradually reduce <b>TnM</b> until the overshoot &lt; 10% of the final value. Fig.5</p>	<p>Follow the results in the Oscilloscope Feature.                      Monitor <b>N cmd</b> on channel 1                      Monitor <b>N actual</b> on channel 2</p> 

Checking set-up values

Action	Outcome
<p>Checking the Speed control parameters.                      Increase <b>I<sub>max</sub></b> to it's permissible value.                      Increase the Step values to 20000. Reduce the Time values to 300.  <b>Warning:</b> Ensure the travel path is safe!                      Re-adjust the set-up by small amounts where necessary. Fig.6</p>	<p>Use the oscilloscope to:                      Monitor <b>N cmd</b> with channel 1                      Monitor <b>N actual</b> with channel 2                      Monitor <b>I cmd</b> with channel 3</p> 
<p>Tighten the Ramp times to the desired values. (approx. 130% of the minimum allowable acceleration time.)  <b>Compare the oscilloscope with Fig.7</b></p> <p><b>Warning:</b> When using the drive in combination with a CNC/PLC, reset the Ramp times below 10 following testing.</p>	
<p><b>Phase Angle Correction</b>                      Set the <b>Dynam</b> parameter to 0. Gradually increase this value until at higher speed, the I cmd value reaches a minimum. Fig.8                      Maximum input value = 90.</p>	

### Saving up-dated parameters

#### Saving up-dated parameters in the Device

By clicking the **Write All** button, all parameters are transferred from the PC to the device RAM. When the device power is removed, the data in RAM is lost. In order to ensure that the data is not lost, it must be written to non volatile flash EEPROM. This is achieved by clicking the **Write 0** button. Each time the device is powered up it loads it's parameters from EEPROM 0 into RAM.

#### Saving the up-dated parameters to PC

To save the current parameter file, click the **disk** icon.

To save to a new parameter file click on the **WINDOWS file** option, select **Save As**, navigate to a suitable folder, give in a suitable file name `yyy.utd` and click on the save button.

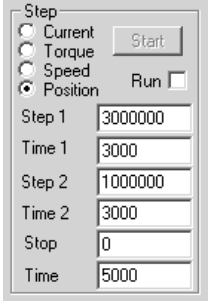
**Position Control Optimisation**

Note: Speed Control optimisation should be carried out prior to Position Control optimisation.

**Start Point**

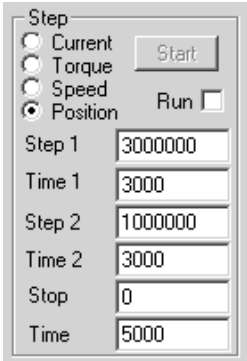
PC (com1 or com2) connected to the device (connector RS232) using a Null modem cable. The Power Supply Voltage (30 to 480V~) is switched off. 24V= is switched on. The Drive Enable relay (labelled RUN) is open, or definitely switched off. The Device independent monitoring systems are enabled.

Open the **DRIVE-2** software. Click on **File, Open**, and navigate through the WINDOWS folders to locate and load a suitable xx.utd file. Alternatively, load the currently active device file by clicking the **Read All** button. Use the WINDOWS File and Save As functions to save the file to PC. Select a suitable folder and file name (xxx.utd)

Action	Outcome
Click on the <b>C</b> symbol to open the Current (I) parameter window	Give in values for I max and I contin, and alter where necessary. During initial testing, set the I max to 25%. Click the <b>Send</b> button.
Click the <b>S</b> symbol to open the Speed parameter window.	All speed control parameters are available for the optimisation process. When a value has been altered, click on the <b>Send</b> button to update the device.
Click on the waveform symbol to select the Oscilloscope function.	The Oscilloscope Window incorporating the Step function generator is displayed.
<p>Previously stored Oscilloscope files can be recalled by clicking on the Open button, and navigating to the correct folder and file name. (extension.uto) Click on the Open button to load the file.</p> 	<p>The Data, Trigger and Step values, as well as the previously captured Oscilloscope Trace will be displayed. Verify that the Step data is correct. The Step source type <b>must</b> be set to <b>Position</b>. The value range for Step1, Step2 and Stop is 0 to 30000. 30000 corresponds to the Nmax value given in the Motor parameter field. The Time field data is in ms, with a range of 1000 to 99999. Shorter time intervals are dependant on PC cycle time, and subject to a loss of accuracy.</p>
Using the PC mouse, alter the Oscilloscope Display Window for size and position using the standard WINDOWS sizing buttons.	
Turn on the Power Supply Voltage.	In the Error feedback window, click on cancel to clear the POWER VOLTAGE error message. The Axis is stationary, and torque free.
Connect up or switch on the Drive Enable signal (labelled RUN)	The Axis remains stationery, but applies a holding torque.

## Position Control Optimisation

**Type A:** Position Control using Speed as the controlled variable (Pos -> Speed) (P - N)

Action	Outcome
<p><b>Null Impulse Referencing</b></p> <p>Activate the end-switches. Select one of the end-switches to act as a reference point. (Ref.) Assign <b>DIN1</b> as <b>Start Ref Drive</b>.</p> <p>With the Drive Enable on, activate DIN1. The axis travels to the end-switch using the speed <b>Speed to</b> set in the Position menu. Once the end-switch is encountered, the axis stops, changes direction and travels off the end-switch using <b>Speed from</b>. Once the end-switch is cleared, the axis takes the next Null-impulse as the reference position and stops.</p>	<p>Once the end-switch is cleared, the axis takes the next Null-impulse as the reference position and stops.</p>
<p>Carry out a step function by clicking on the <b>Step</b> button within the Oscilloscope function.</p> 	<p>The Axis carries out the currently programmed step function.</p> <p>The acceleration is governed by the <b>-Acc</b> value in the <b>Ramp</b> section of the Speed parameter field.</p> <p>The target ramp will be governed by the amplification factor (<b>Kp</b>) set in the Speed menu.</p> <p>Acceleration and maximum speed are governed by the <b>Acc</b> and <b>Limit</b> values in the Speed parameter menu.</p> <p><b>Should an error occur, immediately switch off or disconnect the Drive enable (RUN)</b></p> <p>Check the Motor and encoder/resolver connections! Check the Motor parameters!</p>

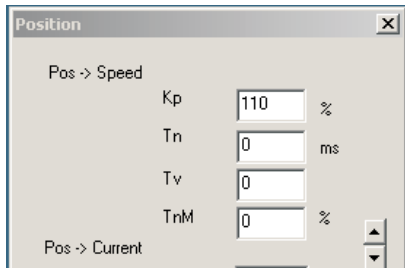
**Position Control Optimisation** (continued)

**Type A:** Position Control using Speed as the controlled variable (Pos -> Speed) (P - N)

**Achieving the optimal Proportional Factor**

**Base settings**

Speed Menu values Ramp **-Acc** to 100  
(Acceleration ramp 100ms) **-Limit** to 3000. (Speed limited to 10% of max.)



**In the Position menu**

Kp (amplification) = 20

All other parameters = 0

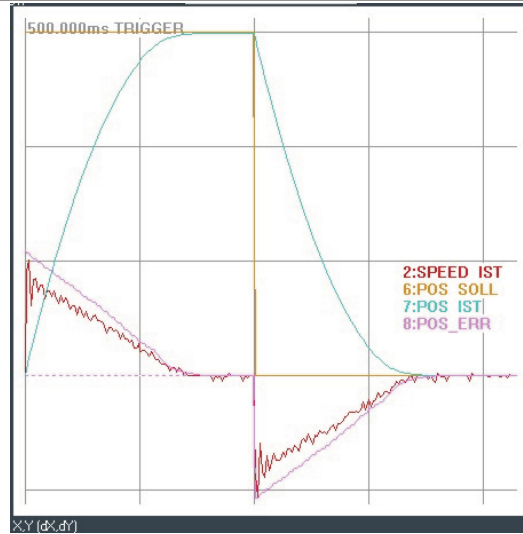
**Parameter Optimisation**

Increase Kp in a stepwise fashion from 20 (fig. 9) until the axis overshoots. (Fig. 10)

Reduce **Kp** until the axis reaches the position with a maximum steepness damped slope. (Fig.11)


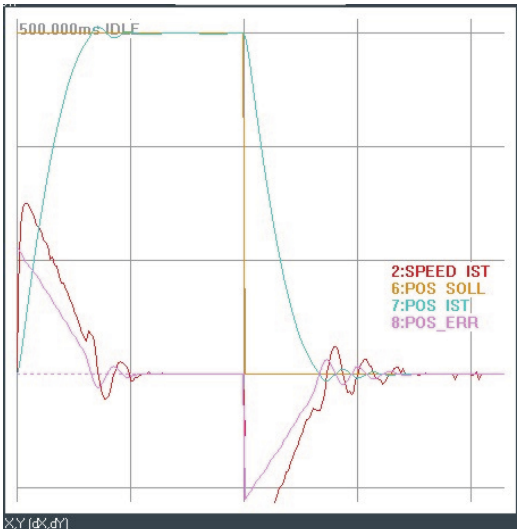
Leave the **Kp** at the highest possible value.

With too high a value, the Motor will exhibit a high frequency oscillation at position.



## Position Control Optimisation (continued)

**Type A:** Position Control using Speed as the controlled variable (Pos -> Speed) (P - N)

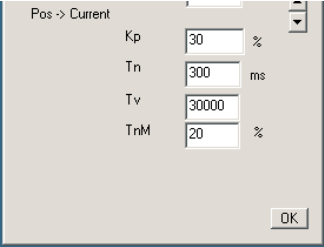
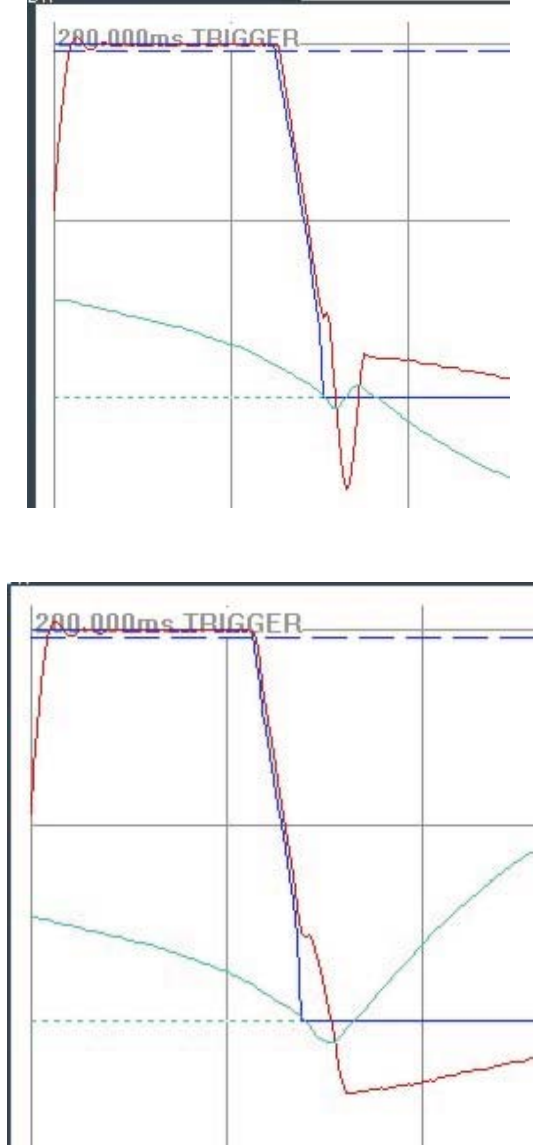
Action	Outcome
<p>Setting the Integration time <b>Tn</b> and Damping factor <b>Tv</b> (Differential term).</p> <p>If <b>Tv</b> is too large, the Axis will creep around the end position. (Fig.12)</p>	 <p>Fig.12</p>
<p>Integration time <b>Tn</b> can be set from 50 to 1000. (generally <math>10 &gt; Tn</math> setting in the Speed parameter bank). <b>TnM</b> should be set so as to eliminate overshoot. (Fig.13)</p>	 <p>Fig.13</p>

## Position Control Optimisation

**Type B:** Position Control using Speed as the controlled variable (Pos -> Speed) until 1000 counts before the end position. The controller then switches to using Current (I) as the control variable for the remainder of the travel.  $(P - N) + (P - I)$

This control strategy provides for better dynamic control during initial high speed travel, and more accurate positioning as the axis reaches it's final destination.

The set-up for type B begins with the Pos -> Speed set-up as already outlined in Type A. Next, the Pos -> Current parameter section in the Position menu must be adjusted. Implementing this special function, requires a good working knowledge of the dynamic behaviour of the axis, the DS400 device, and the **DRIVE-2** software program.

Action	Outcome
<p><b>Optimal Kp setting in Pos -&gt; Current.</b></p> <p>Let <b>Kp</b> (Gain) = 20 Set all other Pos -&gt; Current parameters to 0.</p>  <p>Increase <b>Kp</b> (Fig.14) in a step wise fashion until the <b>Pos Actual</b> overshoots.</p> <p>Now reduce <b>Kp</b> until the <b>Pos Actual</b> approaches the end position with the steepest possible damped slope. (Fig.15)</p>	<p>Monitor the results on the Oscilloscope trace.</p> 

Setting the damping factor **Tv** (Differential term)

If **Tv** is too small, the Axis will overshoot. (Fig.16). If **Tv** is too large, The axis will creep at the end position. (Fig.17)

**Tn** is used to set an integration time. A value of between 50 and 1000 ms may be selected. (approx. 10 > than T for the Speed loop sample time.) If **Tn** is too large, the Axis will oscillate upon reaching the end position. (Fig.18)

**TnM** is used to amplify or attenuate the integral term factor. The smallest permissible value is 5. If **TnM** is too large, the Axis will oscillate upon reaching the end position



Bild 16



Bild 17

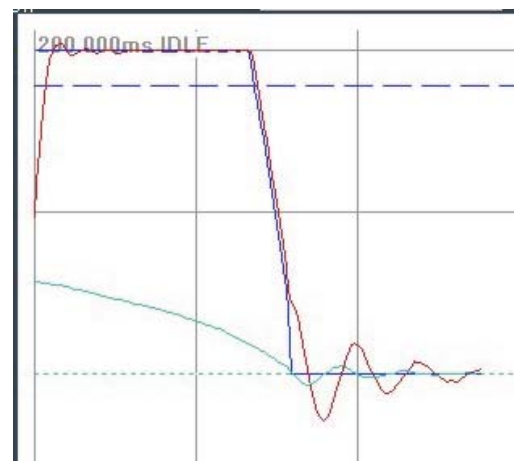



Bild 18



free page

## 3 Fault Finding >V60

### Fault Finding Vers. > 60

#### Fault finding on the PC side

Fault	Fault Message	Possible cause	Action
Access to the CD data not possible			Check the CD Drive with a known good CD. Where necessary, request a new CD
Comm Port fault	NOREPLY-NoRS	Comm cable is not correctly connected.  Incorrect Comm Port (com1, com2) selected in <i>DRIVE</i> com menu.	Check the cable pin outs and solder joints  Select the correct com option
Cannot Send Parameters to the device		No +24V= connected to device. Operator error  Incorrect com port selected	Connect +24V= to the device. Check the Operating instructions Select the correct comm port.

**Fault finding on the Device side**

Fault	F	V	R	B	Fault message	Possible cause	Action
Axis stationary, torque free	0	0	0	0	NOREPLY-NoRS	+24V= not connected	Check the +24V= connection
	0	X	0	0	POWER-VOLTAGE	Power Supply Voltage missing	Check the connectors. Check the Fuses and Main isolator
	0	X	0	0	RESOSIGNAL ROTOR	Incorrect, faulty or un-connected resolver cable	Check the resolver cable
	0	X	0	X	Status no enable	Missing Drive enable signal	Check the Drive enable signal and connection
	0	X	X	X	No message	Current (I) limit too small	Increase the current (I) limit
						Motor connection cut	Check the motor cable
	X	X	0	0	POWER FAULT	Short circuit in the motor or on the motor cable. Over temperature.Current Gain too high	Check the motor and motor cable.Check the temperature and ventilation.Reduce the gain
Internal device fault						Return the device	
Axis is stationery with holding torque applied	0	X	X	X	No message	No command value	Check the analog command signal. Check the CAN Bus and software.
						Motor phases have been swapped	Check the wiring with the Connection diagram
						Resolver-Motor out of phase.	Check the parameters
						Brake applied	Check the Brake current
				IDC Status Idau	The axis is mechanically held	Check the axis mechanical elements	
				ENDPLUS ENDMINUS	Endswitch tripped or not connected	Check the end-switch inputs and I/O parameters.	

LED inicator X=ON  
 F = Fault  
 V = +5Volt  
 R = RUN  
 B = BTB/Rdy

### 3 Fault Finding >V60

Fault	F	V	R	B	Fault message	Possible cause	Action
Motor runs in an un-controlled fashion	0	X	X	X	No error message	Incorrect Motor connections. Incorrect resolver phase angle.	Check the motor cabling. Check the MPos Offset parameter
The motor runs roughly, or with a high frequency oscillation	0	X	X	X	No error message	Resolver cable or Command value cable are poorly shielded. The device earth cable run is too long. Speed loop Gain set too high. Speed loop Integration time too small. Speed loop parameters incorrect	Check the cable shielding. Check the device earth. Check the Speed loop parameters.
The motor exhibits a low frequency oscillation	0	X	X	X	No error message	Speed loop Gain too low. Speed loop Integration time too large Current Limit too low	Optimise the Gain parameter Check the Current limit
Motor runs at incorrect speed	0	X	X	X	No error message	Incorrect Speed loop parameters	Check the parameters in the Speed and Motor menus
Motor direction incorrect	0	X	X	X	No error message	Incorrect analog command value polarity Incorrect digital command value polarity	Swap the analog in AIN +/- terminals Change the command value sign

Fault	F	V	R	B	Fault message	Possible cause	Action
Motor too hot	0	X	0	0	MOTORTEMP	Current Limit parameter set too high. Axis oscillating. Defective thermistor	Check the current Limit parameters. Check the Speed loop parameters. Check the wiring

LED indicator X=ON

F = Fault

V = +5Volt

R = RUN

B = BTB/Rdy