



# Manual: Torque mode ASDA-B2

DamenCNC B.V. the Netherlands  
Louis Pasteurweg 15-17  
2408 AH Alphen aan den Rijn

Author:  
Harm van Scheppingen

## Revision history

-		
---	--	--

## Preface

Thank you for choosing the

## Safety guidelines

This manual contains notices which you should observe to ensure your own personal safety, as well as to protect the product and connected equipment. These notices are highlighted in the manual by a warning triangle and are marked as follows according to the level of danger



### **DANGER:**

Indicates that death, severe personal injury or substantial property damage **will** result if proper precautions are not taken.



### **WARNING:**

Indicates that death, severe personal injury or substantial property damage **can** result if proper precautions are not taken.



### **CAUTION:**

Indicates that minor personal injury or property damage can result if proper precautions are not taken.



### **NOTE:**

Indicates that death, severe personal injury or substantial property damage **can** result if proper precautions are not taken.

<b>Content</b>	<b>Page</b>
<b>1. Introduction</b>	<b>6</b>
<b>2. Powering the drive</b>	<b>7</b>
<b>2.1 Drive powering check</b>	<b>8</b>
<b>3 Wiring the motor and encoder to the drive</b>	<b>8</b>
<b>3.1 Wiring the motor to the drive</b>	<b>8</b>
<b>3.2 Wiring the motor brake</b>	<b>9</b>
<b>3.3 Wiring the encoder</b>	<b>10</b>
<b>3.4 Wiring the control cable</b>	<b>11</b>
<b>3.5 Drive powering check</b>	<b>12</b>
<b>4. Parameter settings</b>	<b>13</b>
<b>4.1 P2-15, P2-16 &amp; P2-17 input</b>	<b>15</b>
<b>4.2 P1-44 Electronic gear ratio</b>	<b>16</b>
<b>4.3 P1-01 control mode</b>	<b>17</b>
<b>4.4 P1-12 Torque command</b>	<b>18</b>
<b>4.5 P1-13 Torque command</b>	<b>19</b>
<b>4.6 P1-14 Torque command</b>	<b>20</b>
<b>4.7 P2-10 Digital input terminal</b>	<b>21</b>
<b>4.8 P2-12 Digital input terminal</b>	<b>22</b>
<b>4.9 P1-55 Digital input terminal</b>	<b>23</b>
<b>4.10 P1-07 Digital input terminal</b>	<b>24</b>

## 4.11 Saving the altered parameters

25

## 1. Introduction

This guide is intended as a quick guide. On our website ([www.damencnc.com](http://www.damencnc.com)) you can find also the full manual for the DELTA ASDA-B2 AC-servo system, use this when getting into details. This manual is only for when you receive the parcel and want to make sure all is working. Fine-tuning of the system will need to be done.

Assumptions:

- Using [Delta ASDA-B2](#) system
- We assume you purchased a programming cable with the set ([1581](#))
- We assume you have a potentiometer ([2804-2805](#))
- We assume you have a selection switch ([2600-2666](#))
- Using standard wiring from DamenCNC or self made using DamenCNC procedures ([1407-1506](#))
- Basic knowledge of mechanics/electronics

With the torque selection parameters you can use you're servo system to drive for example a coil feeder mechanism.



## 2. Powering the drive

The ASDA-B has got a separate input for the power and the control circuits. This enable's the possibility to cut the power to the power amplifiers while maintaining a connection with the control circuitry. This could come in handy when you are building more complex systems with for example error feedback functionality.

In this case we describe a more basic wiring approach to get you up and running.

### 3.1.3 Wiring Methods

For servo drives from 100W to 1.5kW the input power can be either single or three-phase. However, single -phase connections are for servo drives 1.5kW and below only.

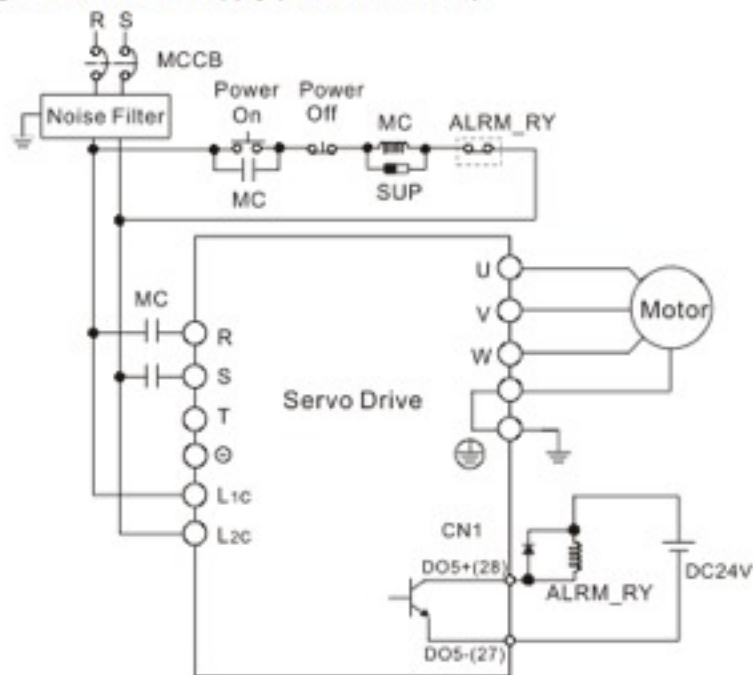
In the wiring diagram figures 3.2& 3.3:

Power ON : contact "a" (normally open)

Power OFF : contact "b" (normally closed)

MC: coil of electromagnetic contactor, self-holding power, contact of main circuit power

#### ■ Single-Phase Power Supply (1.5kW and below)



### CAUTION:

Electrical connections have to be checked carefully. Doing not so **can** result in damaging the drive.

## 2.1 Drive powering check


With the power connections made you can now power the drive. Please note that no motor is connected to the drive. When the drive is powered up it should display the AL011 message, which indicates that there is no encoder connected to the drive. This is the correct message for this situation.

## 3 Wiring the motor and encoder to the drive

### 3.1 Wiring the motor to the drive

For the power connection we use a industrial 4P circular connector. This connector is compatible with our servo cable sets.



Pin	Motor side	Drive	Symbol
1	Red	U	
2	White	V	
3	Black	W	
4	Green/Yellow	Connect to ground terminal of drive	



#### CAUTION:

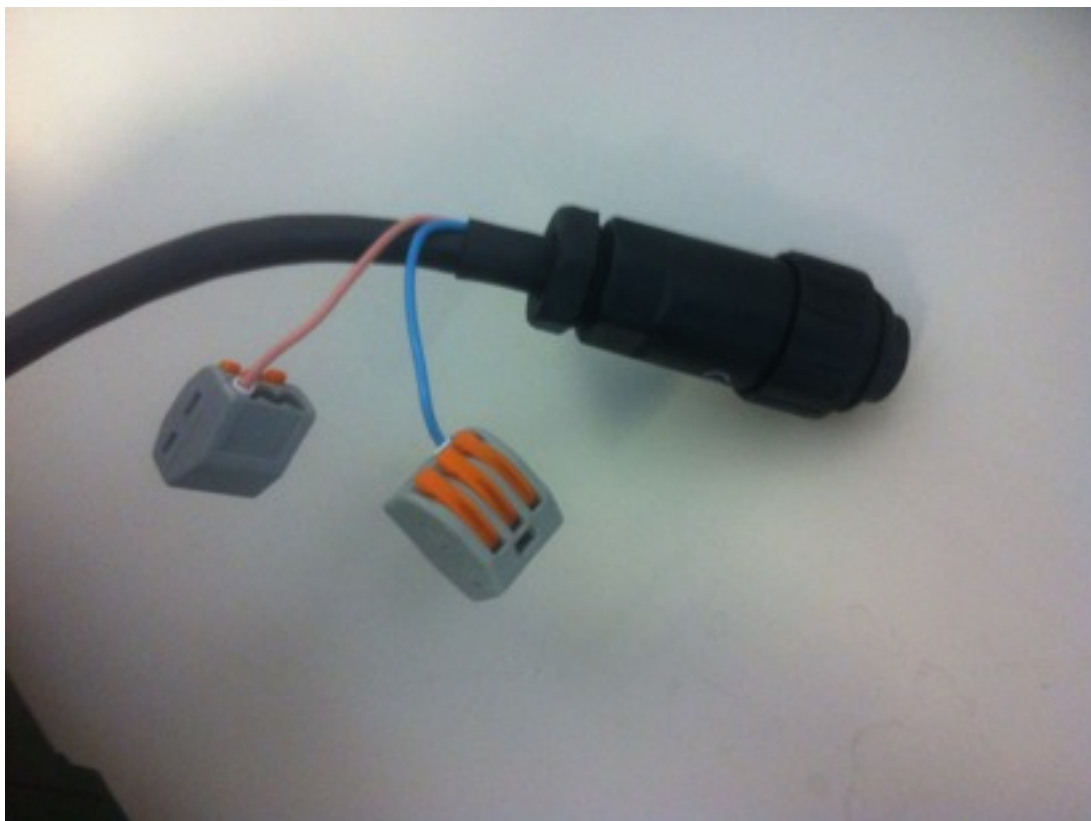
Electrical connections have to be checked carefully. Doing not so **can** result in damaging the drive.



## 3.2 Wiring the motor brake

Some servo motor come equipped with a brake module. This brake module consists of a wire coil and brake plate spring assembly. To operate the motor you need to apply power to the brake coil else you risk damaging the motor.

The following image gives you an example of how to make the proper connections. Please note that the coil has got no polarity and normally is rated for 24VDC.



### CAUTION:

Electrical connections have to be checked carefully. Doing not so **can** result in damaging the drive.

## 3.3 Wiring the encoder

For the encoder connection we normally use a industrial D-sub 9 male connector.



Pin	Motor side	PUR cable	Symbol
1	-	Pink	-
2	Black/red	Red	-
3	Black	White	-
4	White	Grey	T+
5	White/Red	Green	T-
6	Blue	Blue	$\perp$
7	-	-	$\perp$
8	Brown	Brown	+5VDC
9	-	Yellow	-

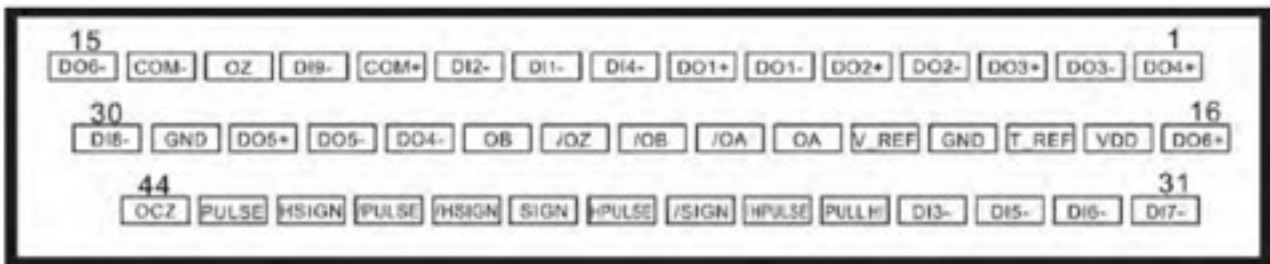


### CAUTION:

Electrical connections have to be checked carefully. Doing not so **can** result in damaging the drive.

## 3.4 Wiring the control cable

To make the proper connections we only need the CN1 connector, as shown in on the image below.



ASDA-B2		0-10V V2	Cable	
Pin	Description	Remark	Cable color	Symbol
14	Ground	GND	Brown	⏏
17	+24V	12-24VDC	Yellow	
18	Analog input	AVI	White	
19	Ground	GND	Brown	⏏
34	Digital input 3	FWD	Green	

## 3.5 Drive powering check

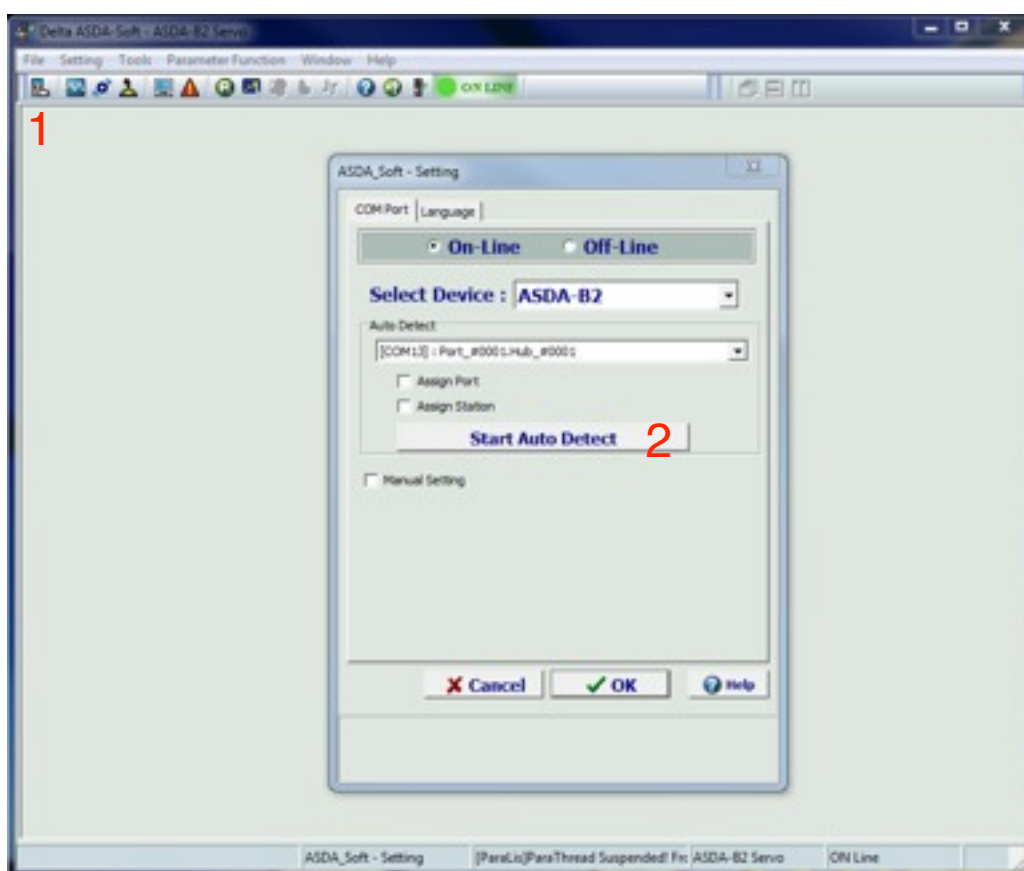
With all cables connected, power the drive once more. You should now see a different error message. Before the drive display AL011 message and now it displays the AL013 message. If you still see the AL011 message something is wrong with your wiring, please start with verifying the encoder cable connections.

The AL013 message means that the emergency stop is active. To get rid of this parameter we need to change some of the drive parameters. The following chapter explains how to do this.

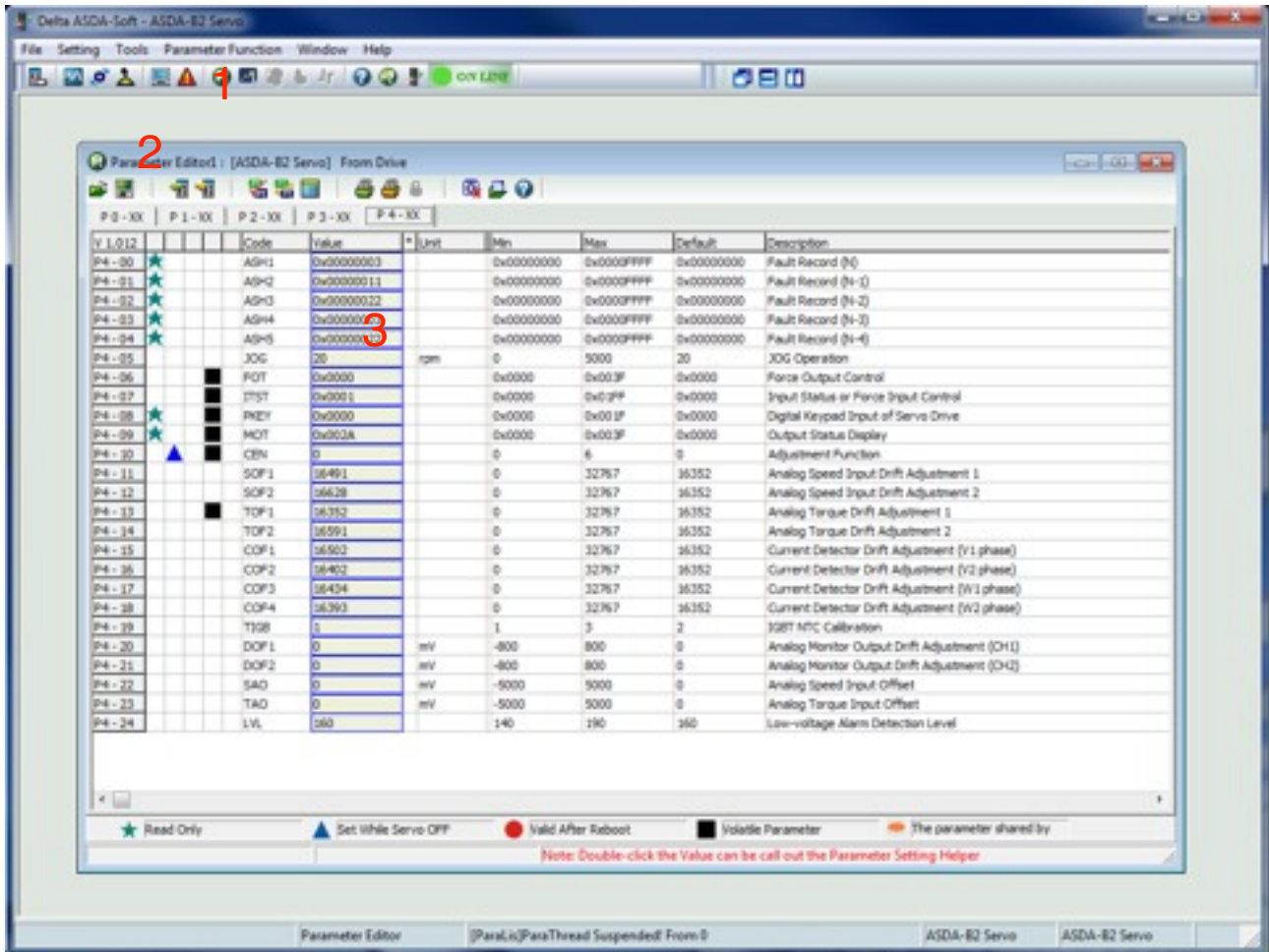
## 4. Parameter settings

For setting the proper drive parameters we recommend you, buying the dedicated programming cable and installing the delta software package. Both can be found at [www.damencnc.com](http://www.damencnc.com)

When you have succes fully installed the ASDA-soft software, you can connect the drive with the PC, by using the dedicated programming cable. Then open the connection page (1) and press the start auto detect button (2). When there is a succesfull connection you can proceed, else you should check you're wiring.



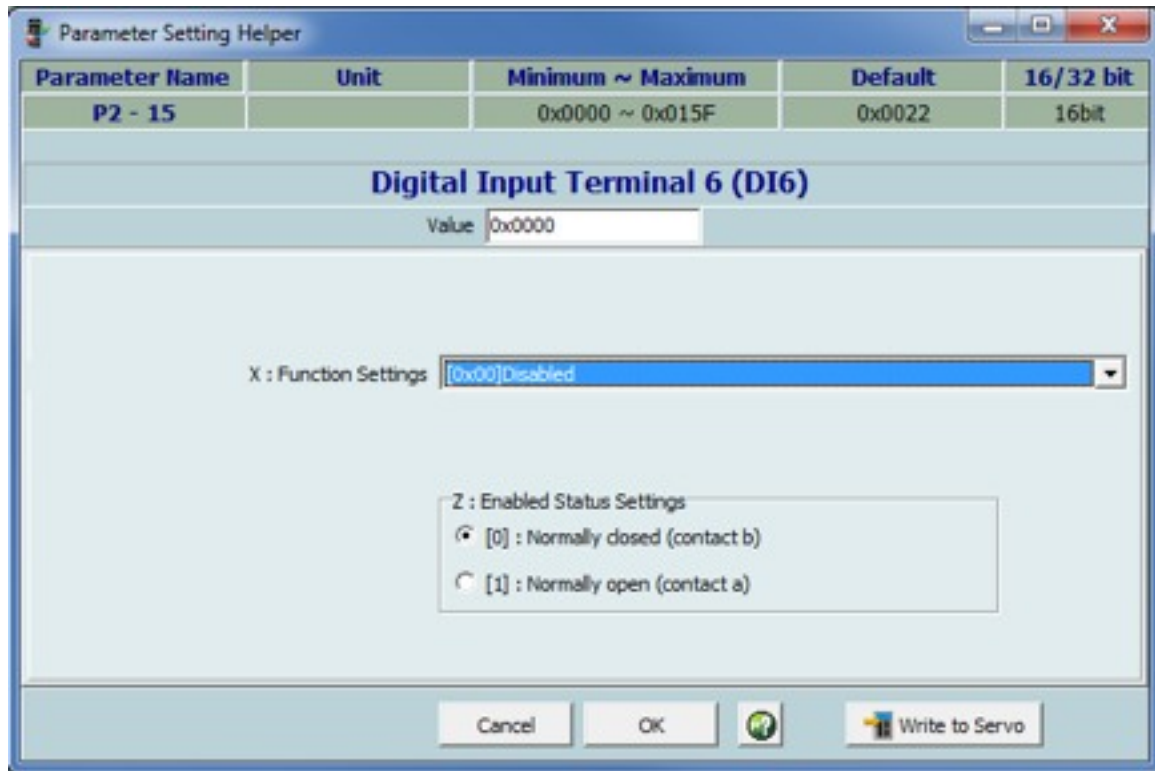
Now open the parameter page (1), with the page opened press the “read for drive” button (2). When the parameter reading is completed the software prompts you with a message. To alter a parameter you can double click on the “value” cells (3) this brings up a new windows which explains what that parameter does.



Now you are ready to set the proper parameters.

## 4.1 P2-15, P2-16 & P2-17 input

Altering these parameters disables them as a digital input. Please note that parameter P2-16 and P2-17 also need to be disabled. You can close the parameters by pressing the “ok” button.



## 4.2 P1-44 Electronic gear ratio

This parameter sets the gearing ratio. We normally alter the default value of 16 to 1600, which implies a 1000 step pulses per revolution. You can close the parameter by pressing the “ok” button.

The screenshot shows a window titled "Parameter Setting Helper" with a table of parameters and a configuration area for gear ratios.

Parameter Name	Unit	Minimum ~ Maximum	Default	16/32 bit
P1 - 44	pulse	1 ~ 67108863	16	32bit

**Electronic Gear Ratio (1st Numerator) (N1)(command unit:160000 pulse/rev)**

Gear 1: P1-44: 1600, P1-45: 10, = 160

Gear 2: P2-60: 16, 10, = 1,6

Gear 3: P2-61: 16, 10, = 1,6

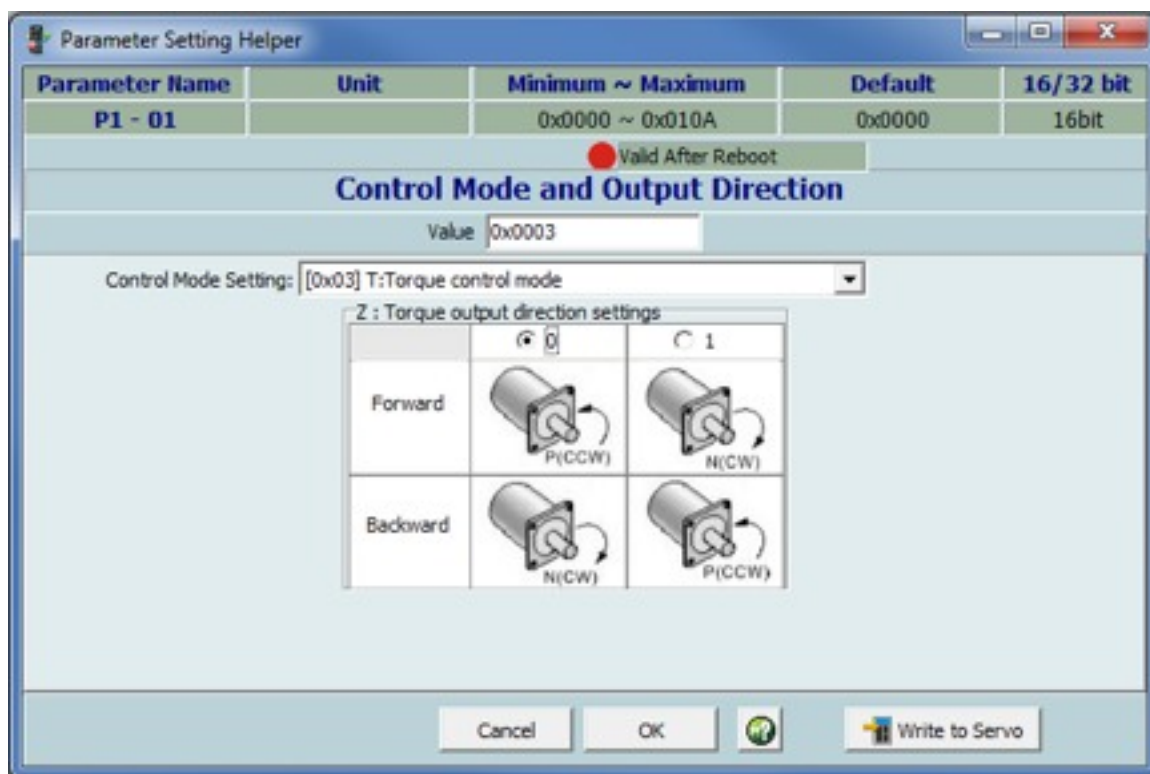
Gear 4: P2-62: 16, 10, = 1,6

Buttons: Cancel, OK, Write to Servo



## 4.3 P1-01 control mode

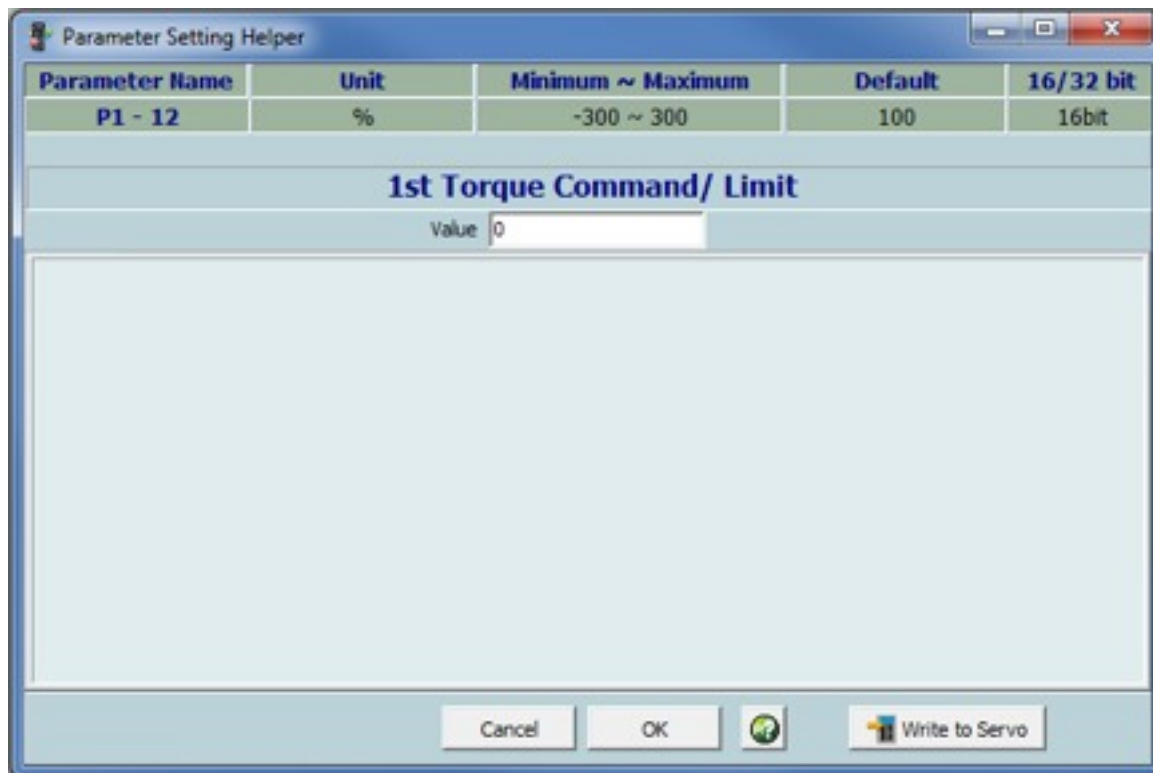
Altering this parameter enables the possibility to switch between position and torque mode. Open this parameter and change its value to 0x0003. You can close the parameter by pressing the “ok” button.



Please note that this parameter will be valid after rebooting the drive.

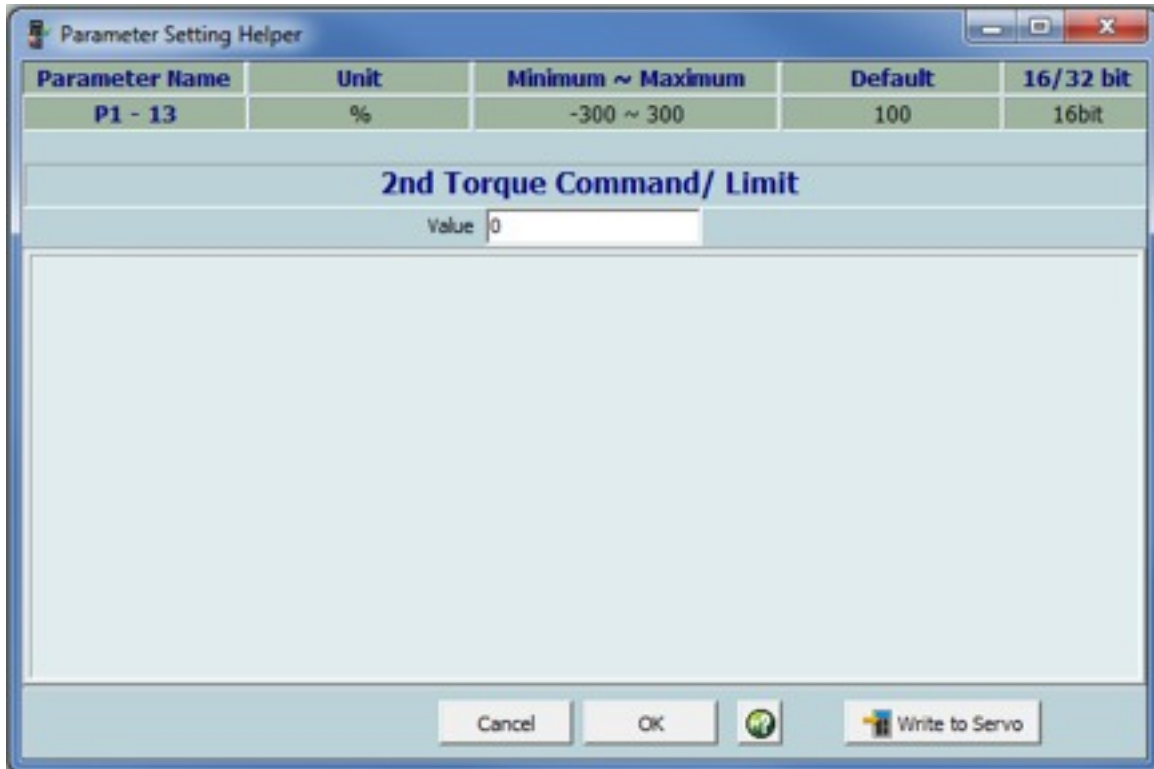
## 4.4 P1-12 Torque command

This parameter sets the internal torque reference, we use is to set the motor torque to zero. You can close the parameter by pressing the “ok” button.



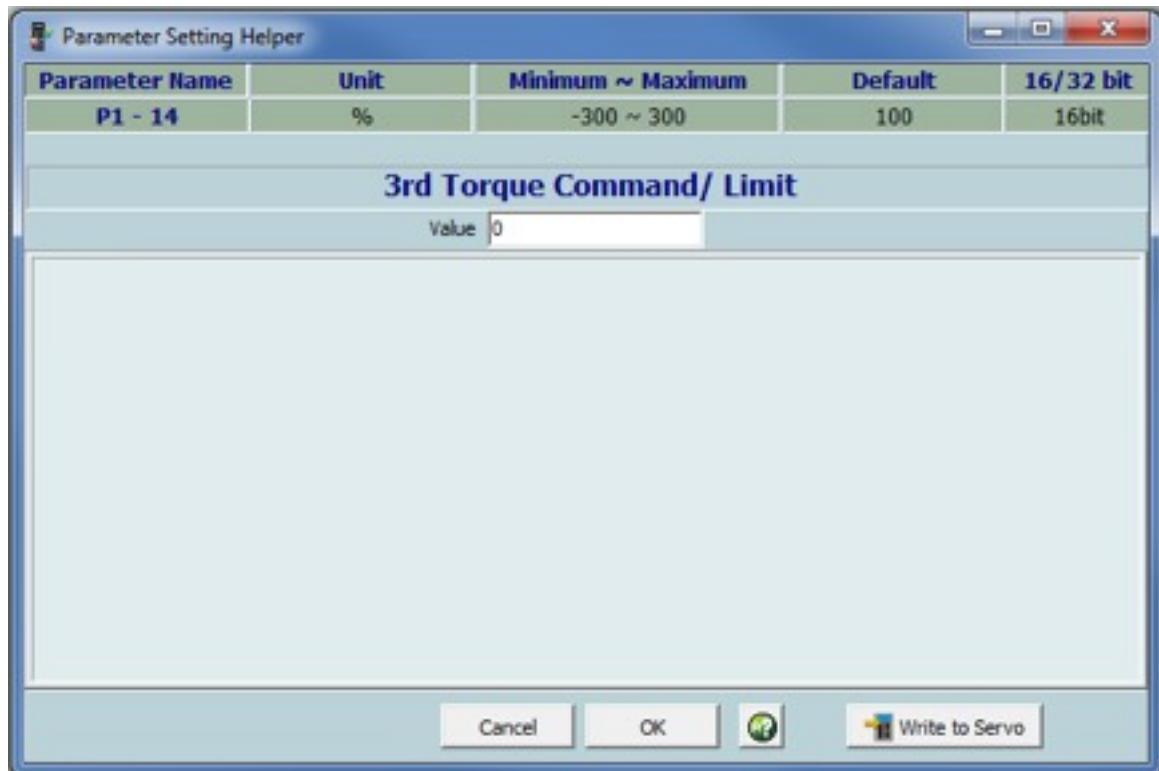
## 4.5 P1-13 Torque command

This parameter sets the internal torque reference, we use is to set the motor torque to zero. You can close the parameter by pressing the “ok” button.



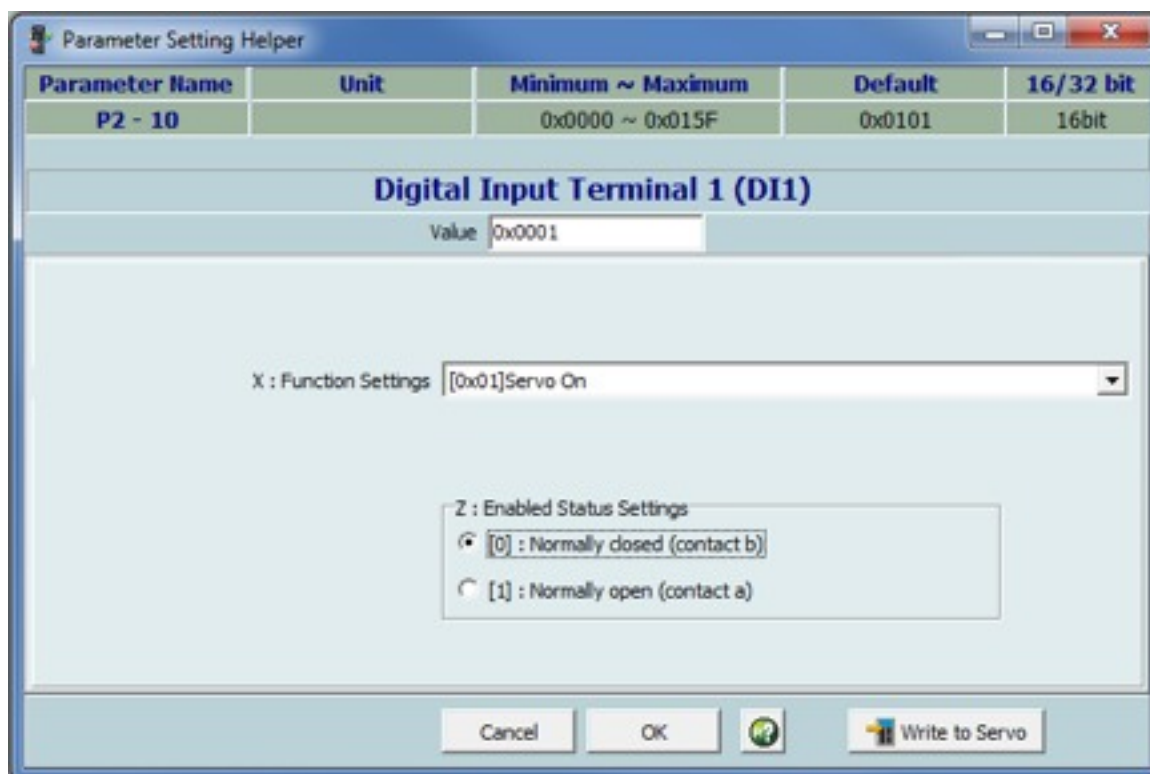
## 4.6 P1-14 Torque command

This parameter sets the internal torque reference, we use is to set the motor torque to zero. You can close the parameter by pressing the “ok” button.



## 4.7 P2-10 Digital input terminal

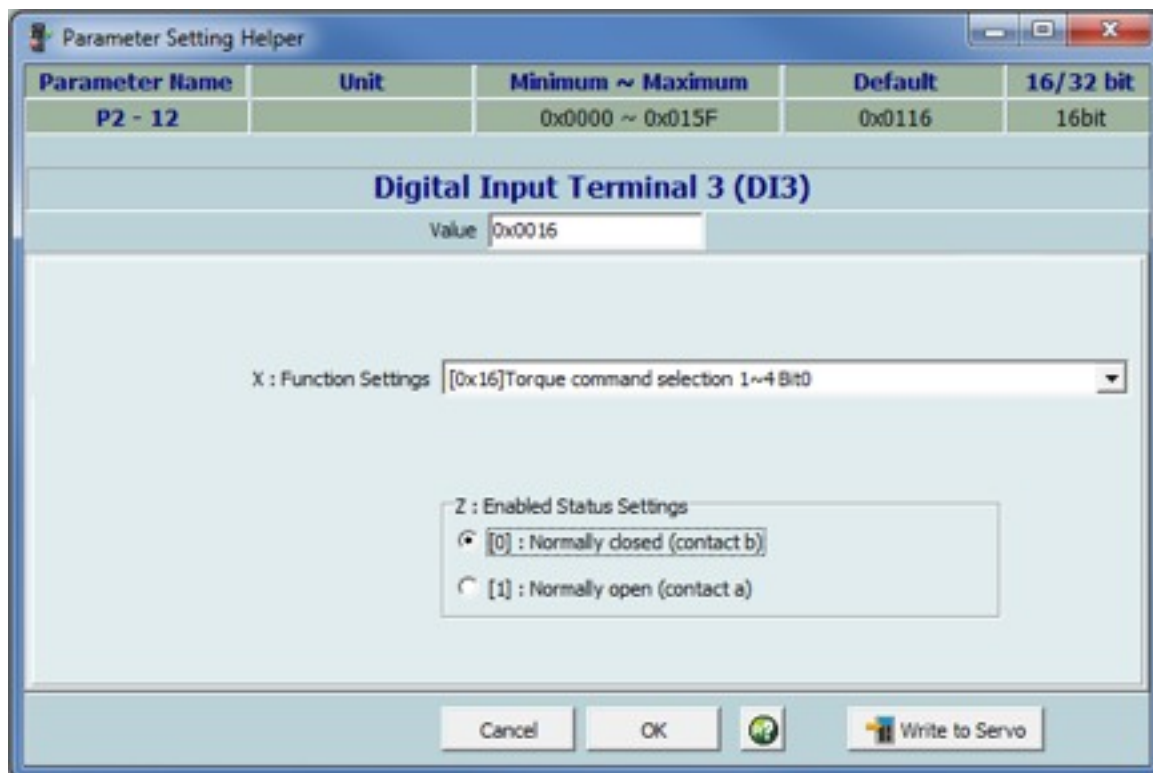
Digital input terminal should be set to servo on by default, we only need to change the enable status setting to normally closed. We also need to change the “enable status setting” to normally closed. You can close the parameter by pressing the “ok” button.



Please note that the enable status settings also need to be changed.

## 4.8 P2-12 Digital input terminal

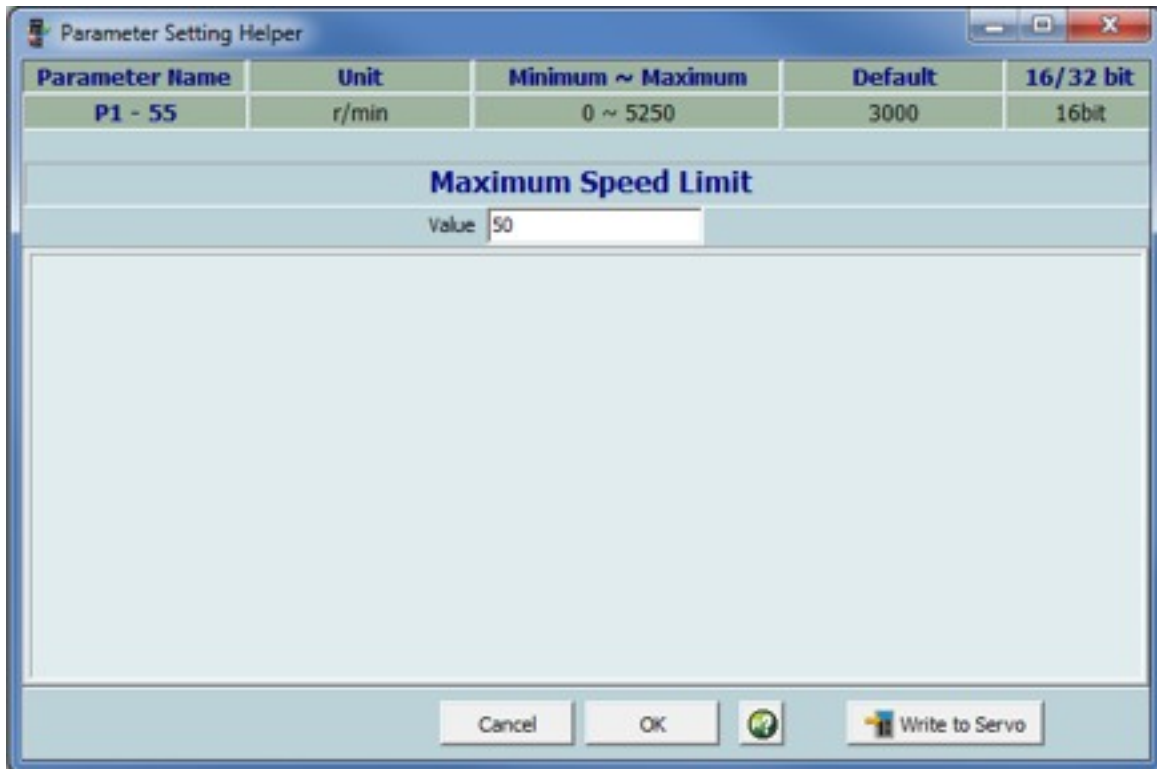
We use digital input 3 for switching between internal and external torque input. Open this parameter and change its settings to 0x0116 “Torque command switching”. We also need to change the “enable status setting” to normally closed. You can close the parameter by pressing the “ok” button.



Please note that the enable status settings also need to be changed.

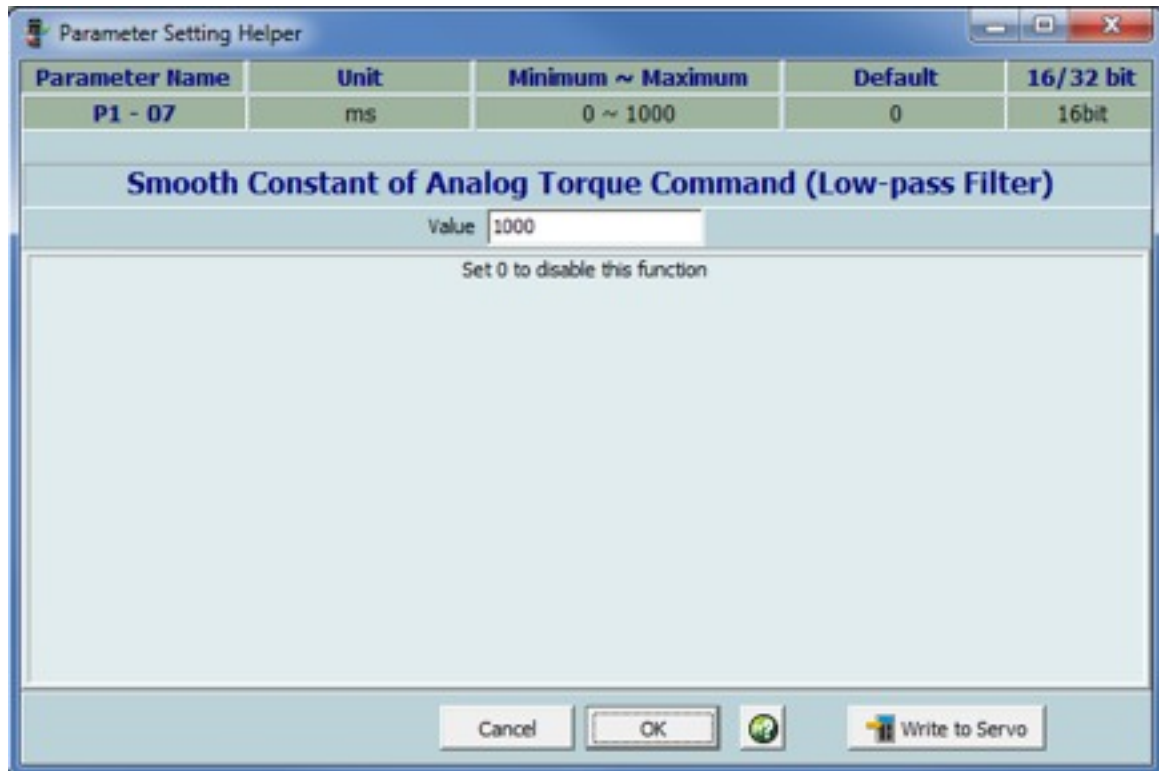
## 4.9 P1-55 Digital input terminal

This parameter sets the maximum motor speed. You can change it to suit your purpose, but we recommend to start with a low value. You can close the parameter by pressing the “ok” button.



## 4.10 P1-07 Digital input terminal

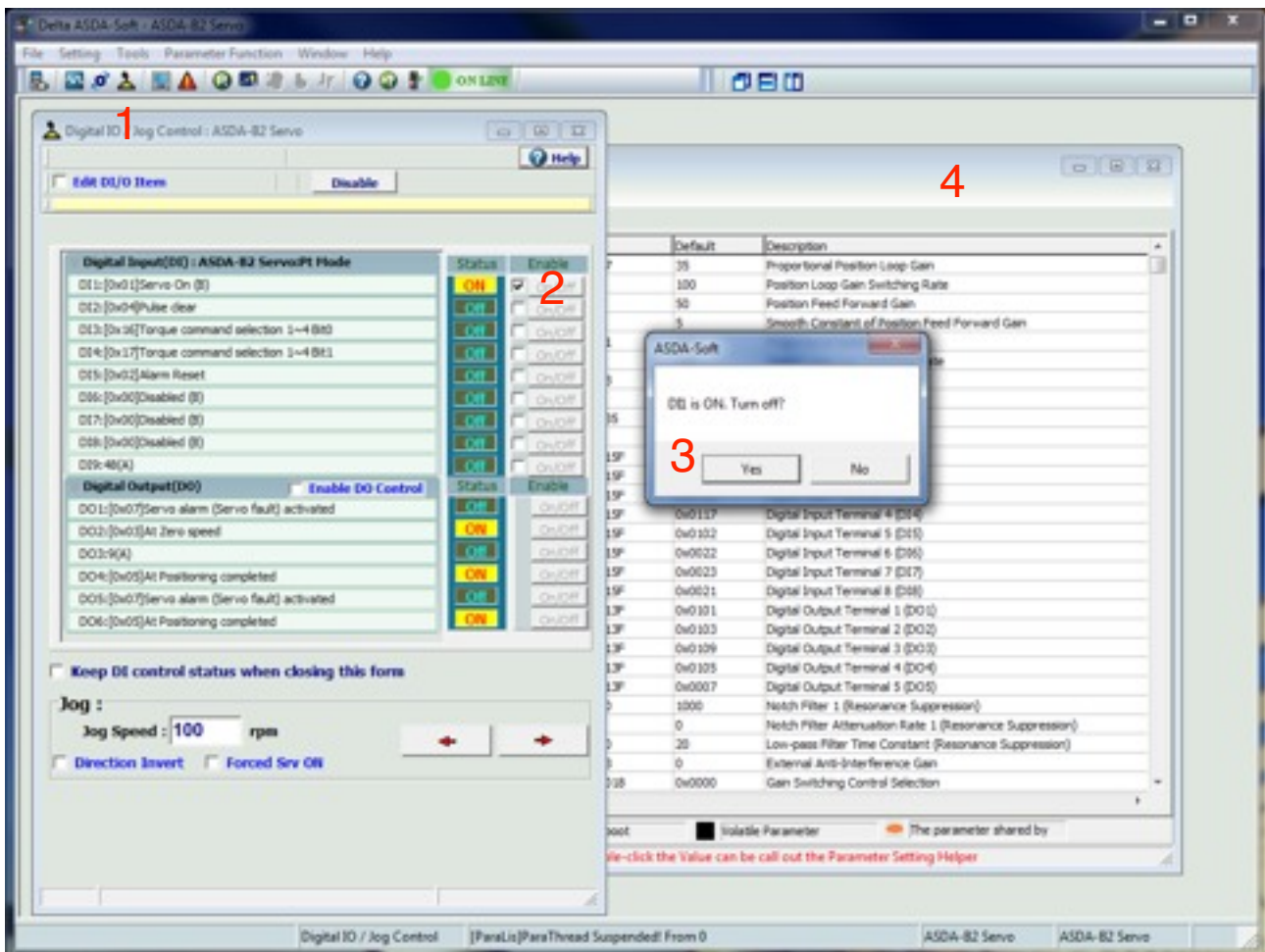
This parameter make the motor ramp up slowly when you change the torque settings with your potentiometer. You can close the parameter by pressing the “ok” button.



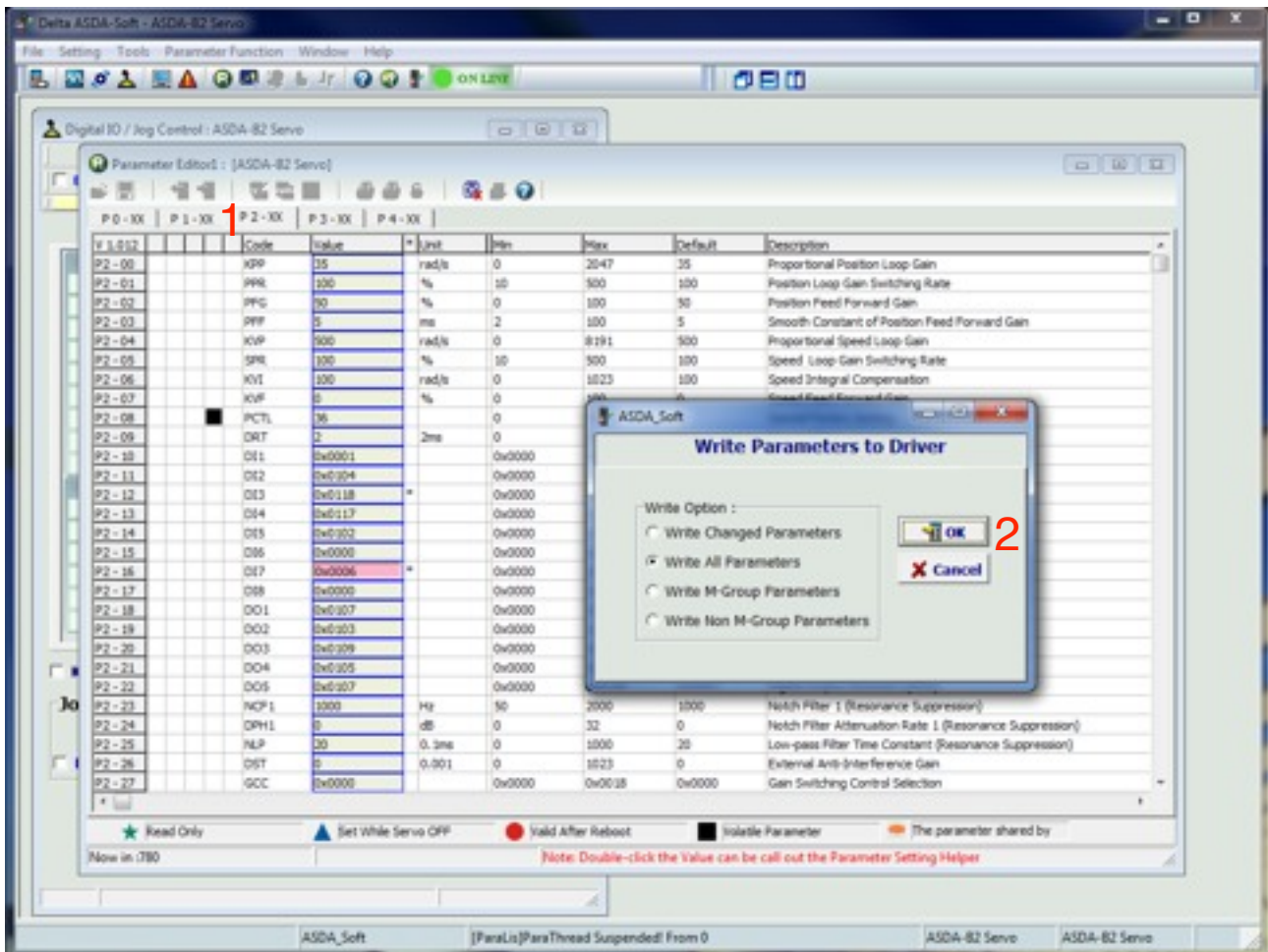


## 4.11 Saving the altered parameters

With the parameters properly set, we need to save them to the drive. Based on your application it could be that the drive is enabled and then the software won't let us upload the parameters to the drive. So first off we verify that the drive is not enabled by opening the control panel (1). In our case the drive is enabled, so we use the controls to switch it off (2). The software prompts you if you are sure to turn off the drive, press yes to turn it off (3). Now bring up the parameter menu but leave the control panel open (4).



Now with the parameter page in front of you, press the “write to drive” button (1), next to “read for drive”. The software opens a new page and asks you to select an option. We recommend the option “write all parameters”, after selecting the right option press “oke” (2) and the altered parameters will be stored in the drives memory.



Note that for some parameters the drive needs to restart in order for them to become active.