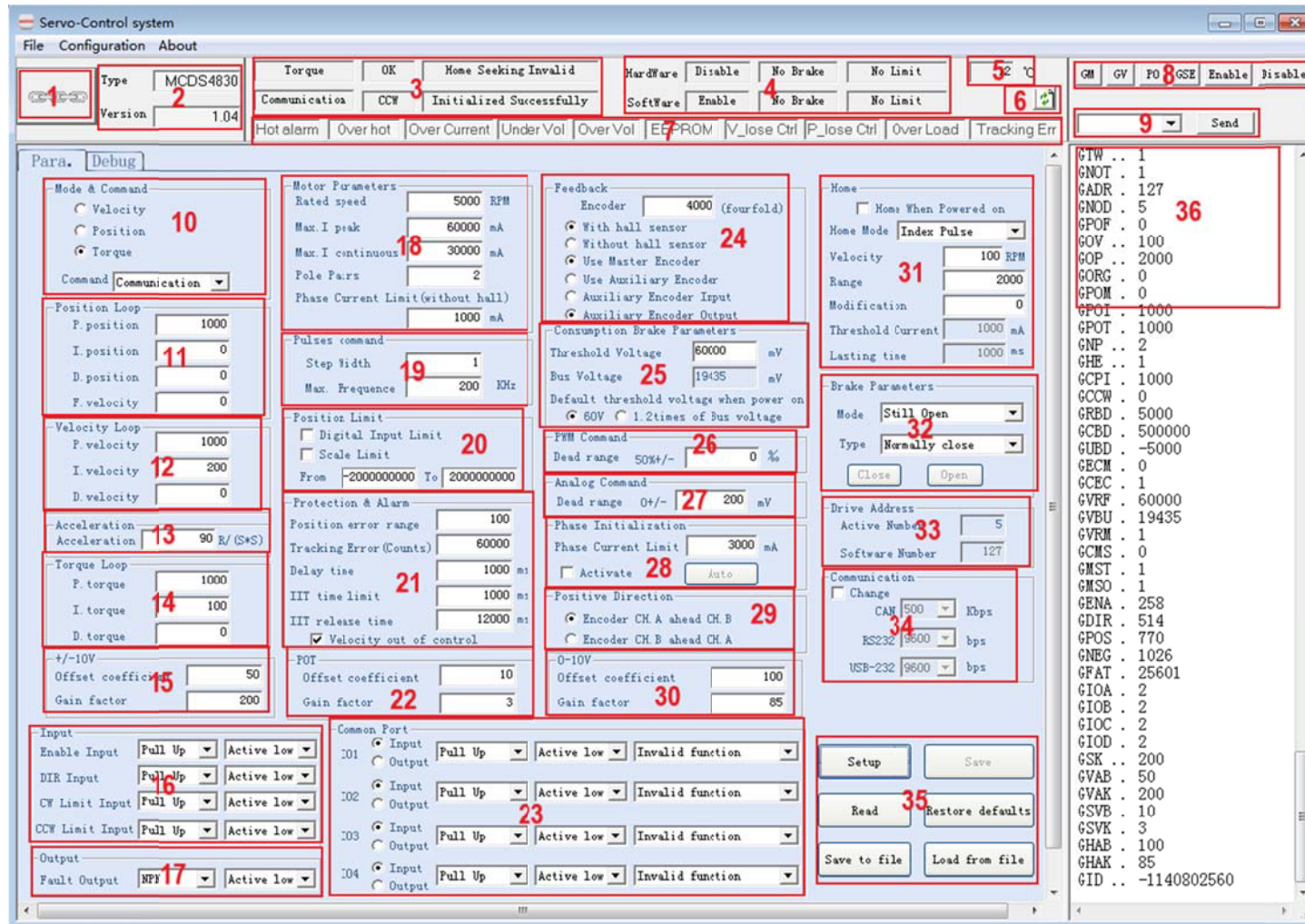


Servo Management for MCDS4830 v1.0


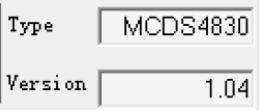
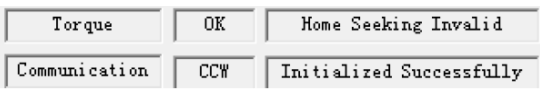

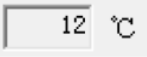



1. Functions Map


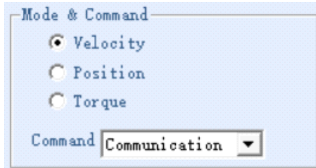
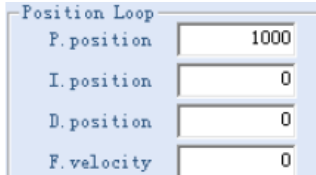
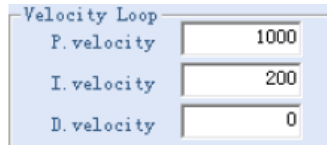

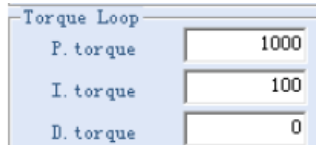


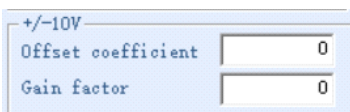
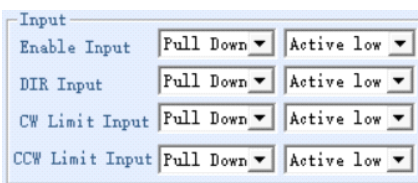

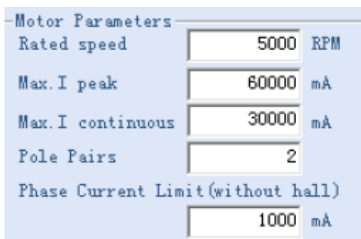
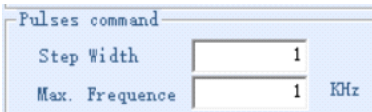
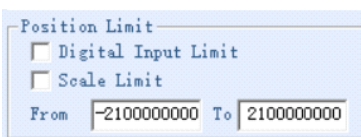
The screenshot shows the 'Servo-Control system' software interface. The top menu bar includes 'File', 'Configuration', and 'About'. The main window is divided into several sections:

- Top Bar:** Contains status indicators for Torque (OK), Home Seeking (Invalid), Hardware (Disable), No Brake, No Limit, and Temperature (52 °C). It also shows Communication (CCW), Initialized Successfully, Software (Enable), No Brake, No Limit, and a Send button.
- Para. Debug:** A tabbed interface for parameter configuration.
- Mode & Command:** Includes radio buttons for Velocity, Position, and Torque, and a Command dropdown menu.
- Position Loop:** Parameters for P, I, and D position control.
- Velocity Loop:** Parameters for P, I, and D velocity control.
- Acceleration:** Parameters for Acceleration and Acceleration (90 R/(S*S)).
- Torque Loop:** Parameters for P, I, and D torque control.
- +/-10V:** Parameters for Offset coefficient and Gain factor.
- Input:** Parameters for Enable Input, DIR Input, CW Limit Input, and CCW Limit Input.
- Output:** Parameters for Fault Output and Active low.
- Motor Parameters:** Includes Rated speed, Max. I peak, Max. I continuous, Pole Pairs, and Phase Current Limit.
- Pulses command:** Parameters for Step Width and Max. Frequency.
- Position Limit:** Parameters for Digital Input Limit and Scale Limit.
- Protection & Alarm:** Parameters for Position error range, Tracking Error (Counts), Delay time, IIT time limit, and IIT release time.
- POT:** Parameters for Offset coefficient and Gain factor.
- Feedback:** Includes Encoder (4000), With hall sensor, Without hall sensor, Use Master Encoder, Use Auxiliary Encoder, and Auxiliary Encoder Input.
- Consumption Brake Parameters:** Includes Threshold Voltage, Bus Voltage, and Default threshold voltage when power on.
- Home:** Includes Home When Powered on, Home Mode (Index Pulse), Velocity, Range, Modification, Threshold Current, and Lasting time.
- Brake Parameters:** Includes Mode (Still Open), Type (Normally close), and buttons for Close and Open.
- Drive Address:** Parameters for Active Number and Software Number.
- Communication:** Includes Change, CAN (500 Kbps), RS232 (9600 bps), and USB-232 (9600 bps).
- Common Port:** Parameters for Input and Output for ports 101, 102, 103, and 104.
- Buttons:** Includes Setup, Save, Read, Restore defaults, Save to file, and Load from file.
- Right Panel:** A list of parameters with values, including GTW, GNOT, GADR, GNOD, GPOF, GOV, GOP, GORG, GPOM, GPOT, GNP, GHE, GCPI, GCCW, GRBD, GCBP, GUBD, GECM, GCEC, GVRF, GVBU, GVRM, GCMS, GMST, GMSO, GENA, GDIR, GPOS, GNEG, GFAT, GIOA, GIOB, GIOC, GIOD, GSK, GVAB, GVAK, GSVB, GSVK, GHAB, GHAK, and GID.

2. Functions Introduction

No.	Blocks	Functions
1		Link button. Before any operation to the drive, this button should be 'Linked'.
2		The drive model and its firmware version. If the drive is linked, the information will be shown here.
3		Drive states shown area. MODE: Position/Velocity/Torque COMMAND: command resource DIR: Actual CW or CCW Home State: Homing, Successfully or Failed. Phase Initialization: Initializing, Successfully or failed.
4		Position Limits indication. Hardware means the digital inputs (CW and CCW) Software means the position range limits saved in EEPROM.
5		To show the drive heatsink temperature.
6		Refresh button. To read all states from the drive (Above 4, 5, below 7).
7		To show the drive alarm states. The item will turn red when it occurs.
8		Shortcut buttons. GM: to read actual position from drive.

		GV: to read actual velocity from drive. PO: to set the current position to zero. GSE: to read actual position deviation. Enable: to enable the drive. Disable: to disable the drive.
9		To input the command manually. Send button. To send the command to the drive.
10		To choose a mode. (Velocity, Position or Torque) To choose a command resource.
11		Position Loop parameters. 'F. velocity' means the Feedforward of velocity. It is usually used in Pulses command resource and set as 1000. P. position and D. position are range from 0 to 30000. I. position is not used.
12		Velocity Loop parameters. P. velocity and D. velocity are range from 0 to 30000. I. velocity is range from 1 to 30000.
13		Acceleration parameter. Unit: revolutions per second squared.
14		Torque Loop parameters. P. torque is range from 0 to 30000. I. torque is range from 1 to 30000. D. torque is not used.

15		<p>±10V analog input calibration parameters.</p> <p>Manufacturer adjusts only.</p>
16		<p>Digital inputs setting.</p> <ol style="list-style-type: none"> 1. 'Pull down' means there is an inner resistor linked this pin to GND. If this pin is not connected, drive will receive 'Low' level. But this pin can't connect to NPN OC input. 2. 'Pull up' means there is an inner resistor linked this pin to VCC. If this pin is not connected, drive will receive 'High' level. But this pin can't connect to PNP OC input. 3. 'Active low' and 'Active high' defines the valid level of this pin.
17		<p>Digital output setting.</p> <p>The output is OC output. NPN or PNP defines the output type.</p> <p>If choose NPN, user should pull up this pin to outside power (3-30Vdc) with a 10k resistor.</p> <p>If choose PNP, user should pull down this pin to GND with a 10k resistor.</p>
18		<p>Motor parameters.</p> <p>According to motor specs, input these parameters.</p> <p>'Phase Current Limit (without hall)' means if the feedback doesn't include hall sensors, the drive will compulsively run motor to a position with this current when powered up.</p>
19		<p>Pulses command resources parameters.</p> <p>Target position = Pulses input * Step width</p> <p>Max. Frequency. When choose the pulses as the velocity command resource, this frequency is corresponding to the 'Rated speed'.</p>
20		<p>Position Limit setting.</p> <p>If activate Digital Inputs Limit, CW and CCW digital inputs will be valid.</p> <p>If activate Scale Limit, the target position will be limited to the below range.</p>

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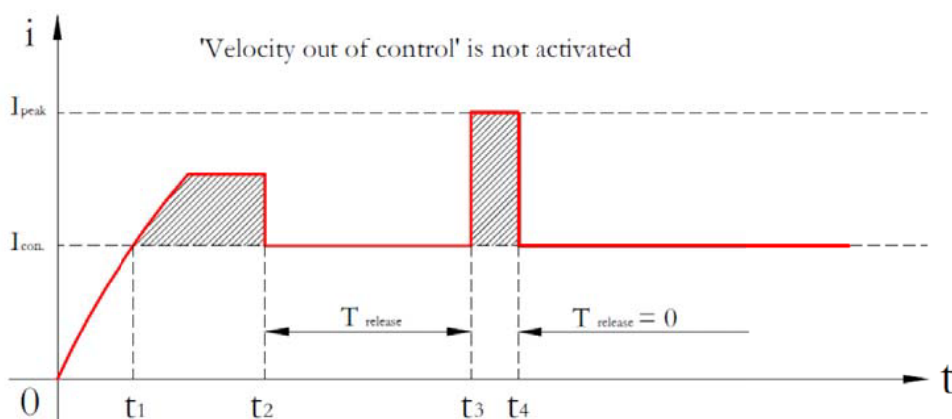
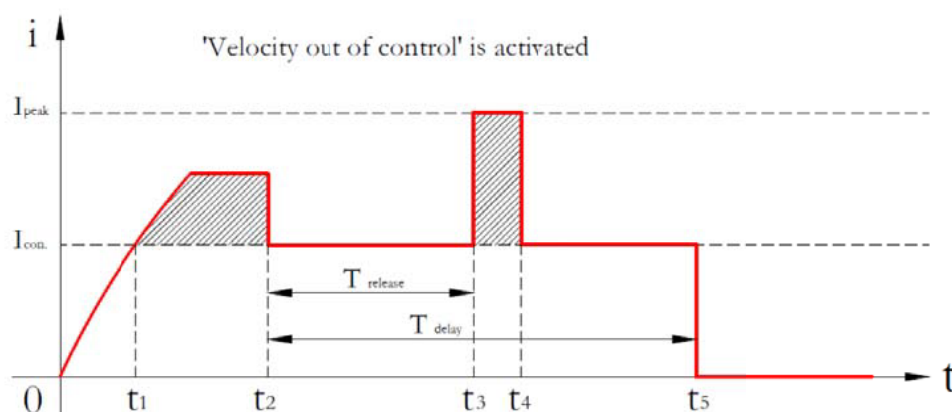
Protection & Alarm	
Position error range	100
Tracking Error (Counts)	60000
Delay time	1000 ms
IIT time limit	1000 ms
IIT release time	12000 ms
<input checked="" type="checkbox"/> Velocity out of control	


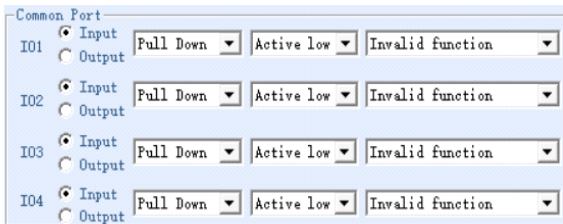
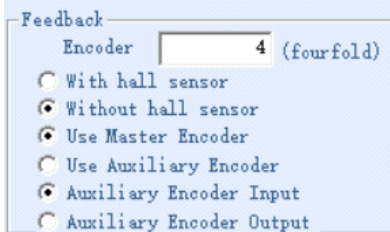
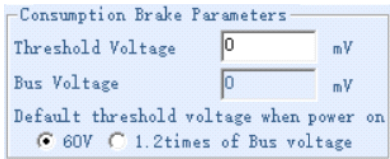
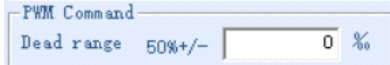
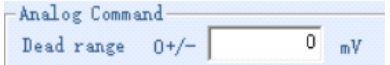
Protection and Alarm settings.

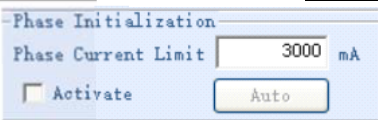
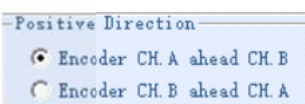
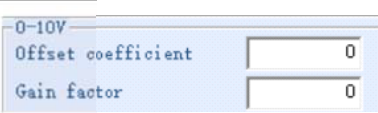
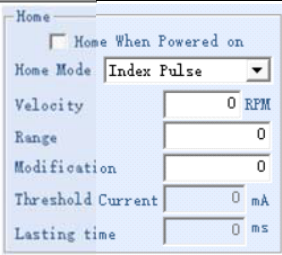

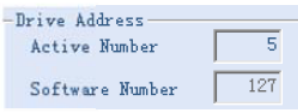

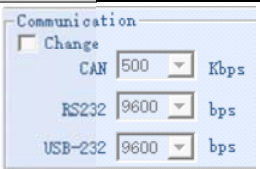
Position error range. If actual position is range in [target position \pm 'Position error range'], the position reached indicator will be valid and turned to '1'.

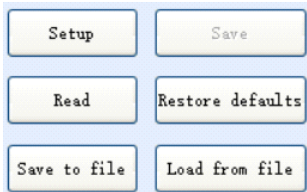
Tracking Error (Counts). When using pulses command and position mode, the deviation between actual position and target position is bigger than the parameter, the drive will alarm and disable the motor.

The current control mode is as following.



		$(I_{peak}^2 - I_{con}^2) * T_{IIT} = \sum_{t=0}^{t2-t1} (\Delta t * \Delta i) \quad ('T_{IIT}' \text{ is IIT delay time limit})$
22		0-5V analog input (POT input) calibration parameters. Manufacturer adjusts only.
23		Digital Programmable Inputs and Outputs. It is similar to Digital inputs and output. The functions will be available.
24		Feedback setting. Encoder. Here should input the counts of encoder. For example, if the encoder has 1000 lines, here should input 4000. With hall sensor / Without hall sensor. Need to choose one from the 2 choices. Use Master Encoder / Use Auxiliary Encoder. Need to choose one from the 2 choices. Auxiliary Encoder Input / Auxiliary Encoder Output. If choose 'Use Auxiliary Encoder' above, 'Auxiliary Encoder output' can't be activated.
25		Consumption Brake parameters setting. If a consumption brake resistor connected to the drive (J10), the settings are meaningful. Bus Voltage is measured by drive and read from drive. Threshold Voltage can be set to invariable 60V or 1.2*Bus voltage and saved into EEPROM. Even it can be set by the user, the it cannot be lower than 1.1*Bus voltage.
26		Dead range setting. It is only for PWM input.
27		Dead range setting. It is only for ±10V, 0-10V and 0-5V analog inputs.

28		<p>Phase Initialization.</p> <p>Phase Current Limit. During phase initializing, the drive will limit the phase current below the setting value.</p> <p>To perform the initialization, 'Activate' should be selected, then press 'Auto' button.</p>
29		<p>To define the CW direction.</p>
30		<p>0-10V analog input calibration parameters.</p> <p>Manufacturer adjusts only.</p>
31		<p>Home parameters.</p> <p>Home when powered on. To choose if activate the function.</p> <p>Home Mode. To choose a home method. Index Pulse or phase current trigger. Index pulse means the home indicator inputs to the Encoder Z channel.</p>
32		<p>Electromagnetic brake parameters setting. (Related to drive port J9)</p> <p>Mode. This defines a control method from 3 choices: command, still open or follow with enable.</p> <p>Type. To define the electromagnetic brake type, normally open or normally closed.</p>
33		<p>Active number means the using address of drive.</p> <p>Software Number means the address saved in EEPROM.</p> <p>If the switch is tuned to zero, the software number will be valid.</p> <p>If the switch is tuned to 1-F, the switch number will be valid.</p> 
34		<p>To change the communication band rates.</p> <p>Before changing the band rates, 'Change' should be activated.</p>

35		<p>Setup: To set the parameters into the drive's RAM, not EEPROM.</p> <p>Save: To give the drive an order to save the parameters from RAM to EEPROM.</p> <p>Read: To read the drive parameters from RAM, not EEPROM.</p> <p>Restore defaults: To restore the defaults and read from the drive.</p> <p>Save to file: To save the parameters on screen to a file.</p> <p>Load from file: To read a file to the parameters on screen.</p>
36	<pre> GTW .. 1 GNOT . 1 GADR . 127 GNOD . 5 GPOF . 0 GOV .. 100 GOP .. 2000 GORG . 0 GPOM . 0 GPOI . 1000 </pre>	<p>Real-time communication records between the management software and the drive.</p>