



RZNC-05 Series

Function Operation

Pulse Equivalent Setup

Fax:+86-10-60553532

Cell:+86-13581806922

[Http://www.richnc.com](http://www.richnc.com)

Skype:wwwrichnccom

E-mail:richnc@hotmail.com

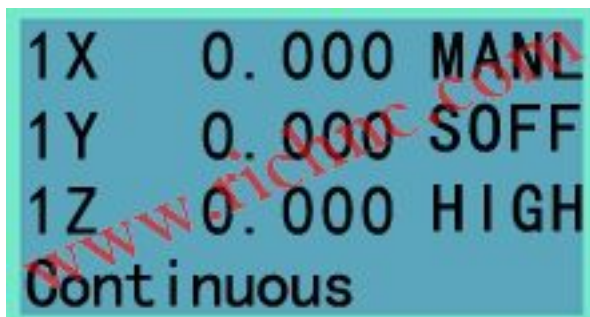
Pulse Equivalent Setup

1. Connect the RZNC Controller with computer or machine, power on, the controller will show your "Goto Home" (as View 1)



View 1

2. Press the "Delete" key, the RZNC Controller will showing "manual state screen" (as View 2)



View 2

Remark:

Because we have not the correct "Pulse Equivalent" parameters now, so we press the "DELETE" key first time.

If we had the correct "Pulse Equivalent" parameters, we must press the "OK" key when the controller show your "Goto Home" with machine (Connect with machine).

If we connect with the computer, we must press the "DELETE" key when the controller show you "Goto Home".

3. Press the "Menu" key, we will enter into the "menu function" (as View 3)



View 3

4. Select the "Machine Setup" and press the "OK" key, we will enter in the "Machine Setup function" (as View 4)



View 4

About the Pulse Equiv(Pulse Equivalent)

The number of pulses which the system needs to send when machine moves every 1mm. Unit is pulse/mm.

a) Stepper Drive

Formula of reasoning

Formula = pulses one revolution/distance one revolution(the ball screw moves one revolution)

Pulses one revolution formula: $(360^\circ / \text{stepper angle}) * \text{Drive subdivision}$

(Notice: Some stepper drivers mark pulse number directly.)

Distance one revolution formula:

Ball Screw drive machine = screw pitch * mechanical transmission ratio

Gear Rack drive machine = rack module * gear teeth number * π * mechanical transmission ratio

So stepper Drive system formula for Ball Screw:



$$\text{pulse} = \frac{360^\circ}{\text{Stepper angle}} * \frac{\text{Driver subdivision}}{\text{Screw pitch} * \text{transmission ratio}}$$

Formula Description:

Step Angle: one of the motor parameters, the angle when motor rotation one stepper.

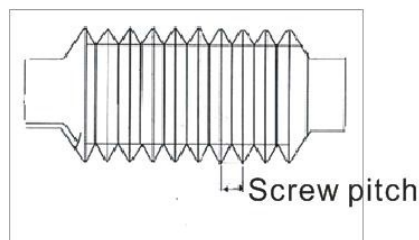
Drive Subdivision: one of the drive parameters, one inherent angle are divided into several on Average. (for example: the drive one inherent angle is 1.8 degree, we sent to one pulse, the motor will rotation 1.8 degree. But now we set drive subdivision as 10, we sent to one pulse then motor just only rotation 0.18 degree)

Screw Pitch: The distance that the nut moves distance when the ball screw makes one rotation.

Transmission Ratio: The speed ratio or angular velocity ratio of the capstan and the driven wheel.



Ball Screw



Screw Pitch

So stepper drive system formula for Gear Rack:



$$\text{pulse} = \frac{\frac{360^\circ}{\text{stepper angle}} * \text{Driver subdivision}}{\text{rack module} * \text{gear teeth number} * \pi * \text{transmission ratio}}$$

Formula Description:

Step Angle: one of the motor parameters, the angle when motor rotation one stepper.

Drive Subdivision: one of the driver parameters, one inherent angle are divided into several on Average. (for example: the drive one inherent angle is 1.8 degree, we sent to one pulse, the motor will rotation 1.8 degree. But now we set drive subdivision as 10, we sent to one pulse then motor just only rotation 0.18 degree)

Rack Module: The distance between two adjacent teeth

Gear Teeth Number: How many teeth on the Gear.

Transmission Ratio: The speed ratio or angular velocity ratio of the capstan and the driven wheel.

b) Servo Drive

The pulse equivalent factory default X,Y,Z,A are 400, Please set the electronic gear ratio in the servo drive according to the pulse equivalent.

Notice:

The numerator of the electronic gear ratio represents encoder pulse number, users can search it in servo driver manual.

The denominator of the electronic gear ratio:

Ball Screw Drive : Handle pulse equivalent(400)* screw pitch * mechanical transmission ratio

Gear Rack Drive : Handle pulse equivalent(400)* rack module * gear teeth number * π * mechanical transmission ratio

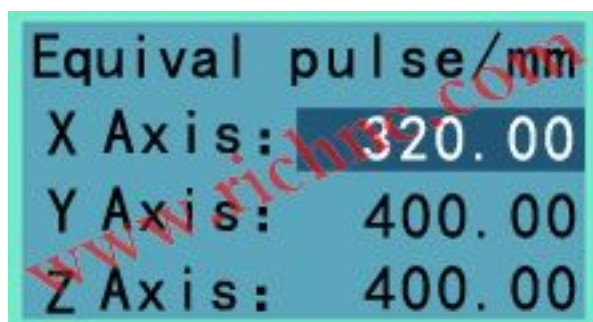
5. Select the "Pulse Equivalent" press the "OK" key, we will enter in the "Pulse Equivalent Setup function" (as View 5)



View 5

6. Please make sure the "X Axis" pulse is "400", if not, please change to "400".

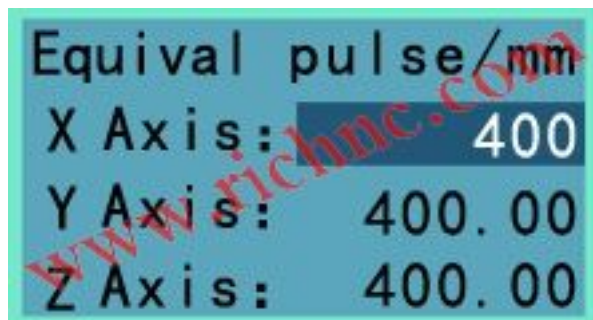
For example: the "X Axis" pulse is not "400" (as View 6-1)



View 6-1

Press the "4" key and "0" "0" keys we will Input "400" (as View 6-2)

If have mistake we can press "DELETE" key to delete the wrong number.



View 6-2

press the "ok" to save and next (as View 6-3)



View 6-3

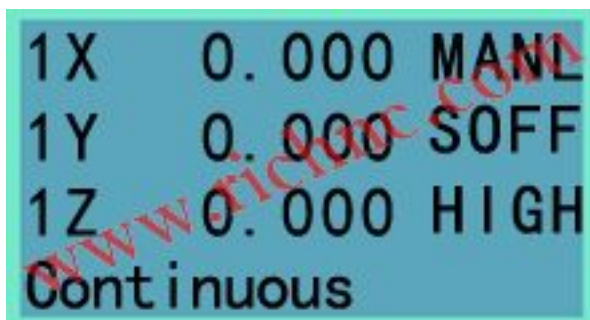
press the "OK" key to save this parameter and cancel the "Pulse Equivalent Setup"

function" (as View 6-4)



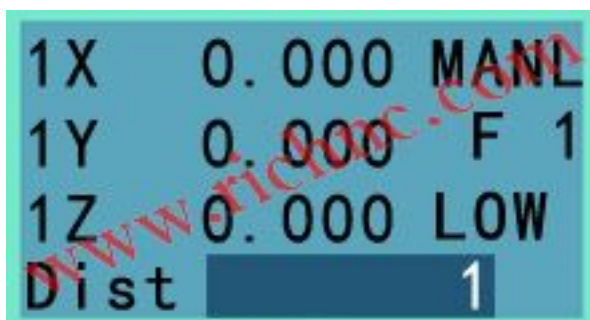
View 6-4

7. Press the "CANCEL" key until return the "manual state screen"(as View 7)



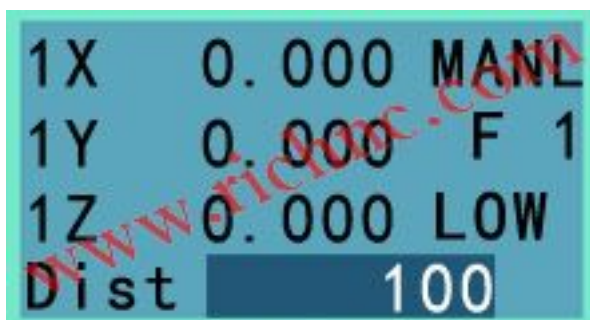
View 7

8. Press the "MODE" key two times , the controller will show you this (as View 8)



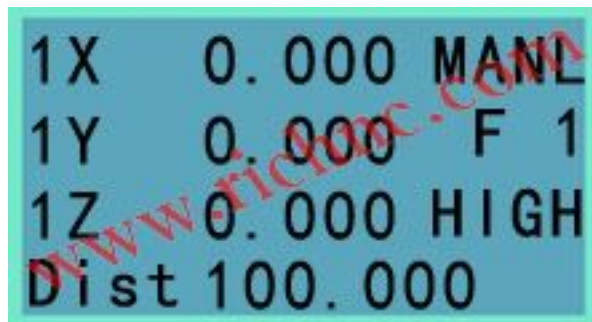
View 8

9. Change the distance number from "1" to "100",input "100" (as View 9)



View 9

10. Press the "OK" key to save the parameter (as View 10)



View 10

Now, we will measure the moving distance on the machine, and we will calculate the current pulse equivalent.

11. Press the “x+” key one time, just one time, the X axis will move.

Pls get the distance from machine origin to now with a ruler.

For example, the distance which you measured is 50mm.

12. The formula used to calculate the X Equiv pulse. It was only about value, not an exact value.

$$(50 \times 400) / 100 = 200$$

Then we got the X axis pulse equivalent, it is around 200 pulse/mm.

13. Press the "Menu" key, enter into the "Machine Setup function" then into the "Pulse Equivalent Setup function" as above steps (1-6) to change the X axis Equiv pulse from “400” to “200” (as View 11).



View 11

14. You could get the Y axis and Z axis pulse equivalent by this way.

Remark:

Please execute "Goto Home" when power on very time!!!!