Read this manual before operation

➢   The content include of electric connections and operating steps

➢   Read the manual to operate the systems

RDC6442U

Dual-head Asynchronous

https://www.ruidacontroller.com

SHENZHEN RUIDA TECHNOLOGY

COPYRIGHT

CERTIFICATION DECLARATION

■ CE

The product has been certified by the CE (Commutate European) safety certification.　It has passed the corresponding conformity assessment procedure and the manufacturer's declaration of conformity, in accordance with the relevant EU directive.

■ ROHS

This product has been certified by EU legislation (Restriction of Hazardous Substances) Safety certification; comply with relevant EU environmental regulations.

■ FCC

This product has been certified by the Federal Communications Commission for safety, Comply with us electronic safety regulations.

SAFETY INFORMATION

When using this system, please make sure the operation is correct and the usage is safe. Some signs or text will be used to remind you to pay attention to the dangerous matters and some important information.

Dangerous：

Indicates a serious danger. In the process of use, if the operation is improper or the way of use is wrong, it may cause serious injury or even death to the user. Please do not operate it easily until you have made sure that the operation method is correct and the way of use is correct.

Warning：

Danger.n the process of use, if the operation is improper or the use is wrong, which may lead to the injury of the personnel, please do not operate the personnel and related personnel easily, until ensure the correct operation method and use method is correct before use.

Cautious：

Represents the potential risk of the product. In the process of use, if the use method is wrong or improper operation, it may cause damage to the product or some parts. Please do not use it until you have made sure that the operation method is correct and the usage is correct.

Important：

Represents important information to be paid attention to during the use of the product.Please do not ignore this information, this information will provide effective operational help.

This sign indicates laser radiation, which is usually posted on products with laser output. Please be careful with laser and pay attention to safety when using this kind of equipment.

Sign in、Devanning、Examine cargo

The product itself with plastic or metal shell, can protect the external electrical components from damage. The products are packed in foam bags and anti-static bags. If there is any external damage to the package, check the equipment and notify the carrier and carrier in writing of the damage.

Inportant:

After receiving the product, please check whether the outer package is intact, check whether the product is complete after unpacking and whether all parts are intact. If any damage is found, please contact ruida immediately.

Remove all cargo from package and keep packing material and wiring parts. Please take care of the safety of the goods when unpacking them.After taking out the goods, please check whether the parts are complete and intact. If any missing parts or damaged parts are found, please contact ruida technology immediately.Do not install or debug the equipment if any obvious damage is found.

Contents

Section 1 Functions Instruction

CONTENTS:

■ System Components

1.1 System Components

The dual-head asynchronous laser cutting machine is composed of two independent XY platform systems. The cutting data is distributed through the computer software and the systems communicate with each other to realize the double-head synchronous start and asynchronous cutting on the common work area.

Each XY platform system includes independent XY transmission and corresponding controller, each of which controls the work of one laser head. In terms of system implementation, In the system implementation, we divide the two sets of controllers into the main controller and the auxiliary controller. The dual-head asynchronous work needs to be started from the main controller.

Dual-head asynchronous can adopt double beam or double cantilever mechanical structure. User must be switched the configuration for the controller and the software according to different mechanical structures, the controller and software interface.

Regarding dual-headed asynchronous, the following points need attention:

1 Laser head 1 controlled by main controller, laser head 2 controlled by auxiliary controller

2 In the double cantilever structure: the left is the laser head 1, and the right is the laser head 2, and laser heads 1, 2 mechanical origins are also in the upper left / upper right, or all at the the lower left / lower right

In the double beam structure: the laser head 1 is below and the laser head 2 is above,and laser head 1, 2 mechanical origins are also at the bottom left / upper left, or all at the bottom / upper

3 Joint processing is started by the main controller.

Section 2　Testing steps

CONTENTS:

2.1 Do testing and configuration the mian and auxiliary controller separately

If user not select[Joint Operation Mode], the main controller and auxiliary controller can be used by switching the laser head 1 / laser head 2 respectively.

Other settings same with standard controller.

User should be note that before single head machine debugging, the two controllers need to be set to non-joint working mode in user parameters.

2.2 Joint Operation

After the main controller and the auxiliary controller are debugge separately, they can be used in joint mode. Before using the joint, you need to check and configure the related settings.

1 Hard limit protection

In order to prevent the laser head 1 and laser head 2 from colliding in an abnormal situation and causing damage to the equipment, a hard limit can be installed between the two laser heads.

For double cantilever models, the hard limit is installed in the X direction; for double beam models, the hard limit is installed in the Y direction.

Although the dual laser head hard limit protection has been set, the hard limit is only a guarantee under abnormal conditions. In normal , it should be ensured that the controller has terminated before the hard limit protection occurs, so as to ensure the equipment safety. 全It is required to set the two-axis safety distance for the main controller and the auxiliary controller separately.

Manually control the movement of the two heads to make them as close as possible, and confirm the laser on of the two heads separately, measure the distance between the two heads, and leave a certain margin on this basis.

Installation distance of two axes = distance between two heads + safety margin

2.3 Set the distance between two axis origin points

The measurement method of the biaxial origin distance is to move the laser head 1 and the laser head 2 to origins, and then laser on separately to measure the actual distance between the two points.

To set the double axis origin distance for the main controller and the auxiliary controller. Only if the two-axis origin distance and the two-axis safety distance are set correctly

It can be guaranteed that when the laser head 1 or 2 is moved manually, the movement is stopped in advance before the laser head collides.

2.4 joint control mode

Enable the joint control mode of the main controller and the auxiliary controller separately

2.5 Software page size and safety distance Setting

The "Dual-axis origin distance" and "Dual-axis safety distance" of the controller have been set in steps 3 and 4. These two parameters are provided to the controller for safety protection.

The corresponding parameters need to be set on the software to ensure the accuracy and safety of asynchronous cutting

The "Page Width" in the page parameters needs to be the same as the "Dual axis origin distance".

The "safety distance" in the output parameters needs to be the same as the "two-axis safety distance"
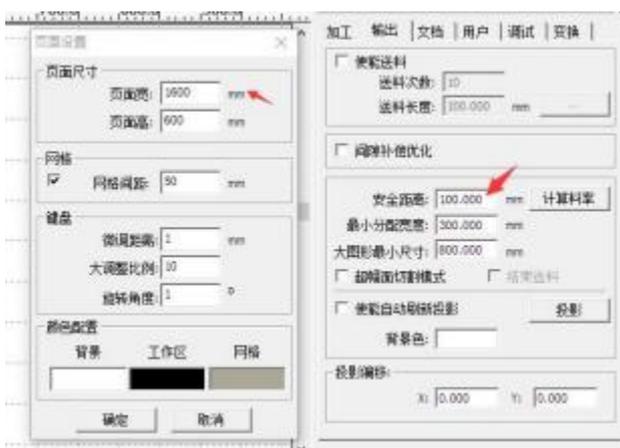
Only when the "Page Width" is correctly, it can be ensure the accuracy of the splicing position of the dual-head cutting graphics. If the "Page Width" be set too large ,it may cause the dual-head cutting graphics to overlap and the two heads collision. Conversely, it may cause the big gap when the double-headed cutting patterns are docked.

The "page height" is also required to be consistent with the actual machine.

2.6 Coordinate origin

The blue arrows in the software work area indicate the coordinate systems of the primary and secondary controllers. Select the machine type as "Double Cantilever"

Checking "Reverse" means that the mechanical origin of the main controller is on the upper left and the machine origin of the auxiliary controller is on the upper right. Unchecking "Reverse" means that the mechanical origin of the primary controller is at the bottom left, and the mechanical origin of the secondary controller is at the bottom right.

Select the machine type as "Double Beam"

Checking "Reverse" means that the mechanical origin of the main controller is at the bottom right and the machine origin of the auxiliary controller is at the top right. Unchecking "Reverse" means that the mechanical origin of the main controller is at the bottom left and the machine origin of the auxiliary controller is at the top left.
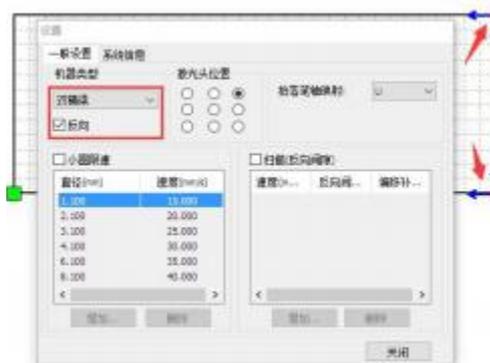
Section 3 Laser Cutting Function

CONTENTS:

■ Single head cutting

3.1 Single head cutting

The software supports cutting with a single head, and also supports dual head cutting. In general, single-head cutting is required during machine commissioning or some special occasions (such as cutting large graphics with a single head).

As mentioned in prevous, to cut with a single head, the machine needs to be configured in non-joint mode.

igin to ensure the maximum usable format for the single head.

2　Use the operation panel to move the single head for cutting, and test whether it can reach the maximum format, or the single-head format is set too large. If relevant tests have been done during the tuning process, you can skip this step.
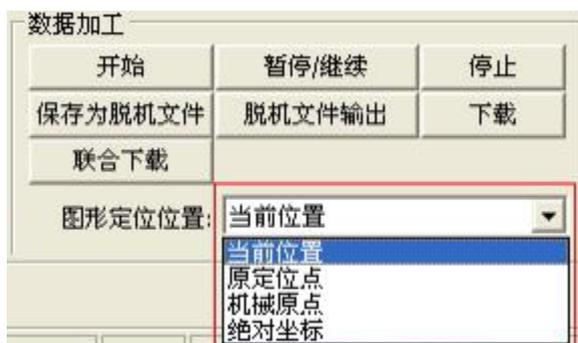
3　Import or draw the cut graphics.

4 Select the laser head to be used in the software. To use the main head for cutting, select laser head 1, otherwise select laser head 2.
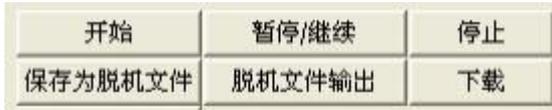

5 Uncheck "Joint operation mode

6 Set the "Graphic Position" as required.

7 Use "Start" to output directly; or "Download" the file to the controller and start from the panel

3.2 Joint cutting

1 Configure the software and
controller as described in previous

2 choose"Joint Operation Mode"

3 Click "Start" on the operation panel corresponding to the main controller.

There are some difference with single cutting:

1 The output device is automatically selected and does not need to be specified, but the power parameters of laser 1 and laser 2 need to be configured separately.

2 The output port does not need to be selected, and is automatically downloaded to the main controller and the auxiliary controller according to the graphic distribution.

3 Graphic positioning position option is invalid. In joint working mode, it always defaults to absolute coordinate positioning
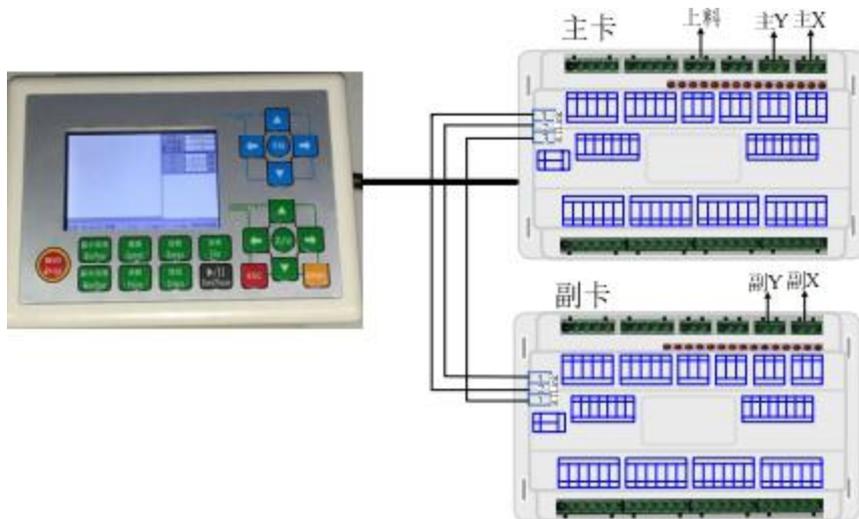
Section 4   Hardware description

CONTENTS:

■ **Dual card + single panel hardware architecture**

4.1 Dual card + single panel hardware architecture

The hardware architecture is shown in the figure below, the panel is connected to the HMI interface of the main card, and the auxiliary card does not need to be connected.

Dual card wiring diagram

4.2 Precautions for single panel operation

Here only for special features of the above single controller .For more detailed instructions on the use of the single controller, please refer to"RDC6442G Control System User Manual"

1、（Slave）

The secondary keyboard has five keys: up / down, left / right, and Fn. The function of the Fn key is currently unused. The up, down, left, and right keys are used to assist the XY movement of the laser head. Except for the other 16 keys of the secondary keyboard, it is similar to the display panel of a conventional RDC6442 system

2、Reset button

When press the reset button,, both the primary and secondary cards are reset.

3、pulse

When the press the pulse key, the sub card and the main card are fire at the same time, that is, two laser heads are fire at the same time (if both are enabled). Among them, in the Z / U menu, the four parameters of the pulse mode, jog mode, pulse time, and jog time are set to take effect on both cards at the same time.

4、Max / Min Power / Speed Key

When the three parameter keys are pressed, the parameter is modified, the modification is effective for both cards at the same time.

5、Position key

In principle, the two keys work at the same time when the positioning key is pressed, but because the dual-head asynchronous model always works in absolute coordinate mode, actually the positioning key is invalid.

6、Start / pause key

This key is used to start / pause and resume work. When pressed, the two cards are effective at the same time, that is, if　pressed this key when idle, joint processing is started; when pressed, two cards are suspended at the same time; when paused, press this key, both cards continue to work at the same time.

7、ESC key

The ESC key also works for both cards at the same time. When the work is suspended, pressing this key will cancel the work of both cards at the same time.

8、Two controller IP settings

Press the Z / U key to enter the IP setting dialog box. You will see two IP setting dialog boxes, where IP1 refers to the primary card IP and IP2 refers to the secondary card IP.

9、Set / restore to factory parameters

Once the set or restore factory parameters are selected in the lower-level menu of the Z / U key, and the correct password is entered, the two controllers are set or restored to the factory parameters at the same time.

10.Format memory

When you choose to format the memory, both controllers will format their respective memory at the same time.

11、Delete Files

When the delete file operation is selected, both controllers will perform the delete file operation at the same time. If you choose to delete the No. 3 file, the main card and the sub card will delete the No. 3 file in their respective memories at the same time.

4.3 Special Note

The operation panel cannot view the files in the secondary card, but only the files in the main card. At the same time, during processing, the graphic dynamic track on the HMI screen also refers to the track of the main card.

Thank you for your selection of our production!

All the copyright of this manual is owned by Ruida technology. Any person or company can not copy upload and send the manual without Ruida's permission.

Content will be revised or modified. We will not send message to every users.

If there are any question or suggestion about our products and manuals, please tells us.

Tel：(086)0755-26066687

Fax：(086)0755-26982287

Adress： 3th floor,Technology Building,NO.,1067 Nanhai Avenue,Nanshan District,Shenzhen city,Guangdong Province,P.R.China

Website：www.rd-acs.com