海斯科技-让切割更精彩

HFA2

电容式高度控制器

Capacitive Torch Height Controller

技术手册

Operation Manual

版本：1608



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ATTN: Before Using HFA2, Read the operation manual carefully.

1. Important information

1.1 Service assistance and contact information

For service assistance, have the following information available:

• HFA2 model, part and serial number located on a label

• Type of cutting application you are using

You can contact us:

TEL: 086-0519-89182619 FOX: 086-0519-89183619

1.2 Receiving and unpacking

After receiving the HFA2 you should:

• Carefully, unpack and inspect the equipment.

• Compare the received shipment with the packing list.

• Report any damage to the carrier and your representative.

• Store equipment that will not be used in a clean, dry location.

• Take appropriate precautions to prevent moisture, dust and dirt from accumulating in storage and installation areas.

1.3 Safety considerations

Safety practices should not be an after thought. Before installing or servicing the controller, review and follow applicable policies and procedures to ensure worker safety. Machinery must be in a safe state and you must be aware of

any additional hazards that can arise.

1.4 Pre-installation considerations

Before installing the HFA2:

• Check to be sure that you have all of the required parts.

• Check to be sure that the torch lifter motors you are using with the HFA2 are within the acceptable range.

1.5 Configuring the lifter mechanics

Proper configuration of the torch lifter is an important factor for establishing the accuracy of your cutting system. Be sure that:Gear reduction is selected on the torch lifter so that the maximum suspension speed does not exceed 1500 mm/min. If higher accuracy is required, maximum suspension speed should be set to 1000 mm/min.

2. GENERAL DESCRIPTION

2.1 General description

HFA2 is a closed controlling system. It contains 4 parts: Detecting the position signal, transform the signal treated, logic control and motor drive. This system is applied to CNC flaming cutting. equipment whose cutting torch height needs to be adjusted automatically.

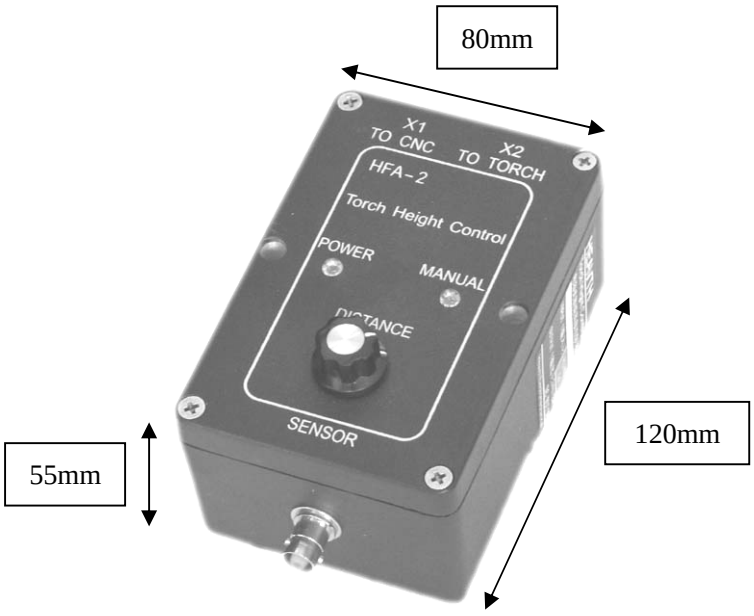
The height signal detecting device makes use of the capacitance sensor。It is isolative between sensor ring and NC

machine. The sensor ring is underneath the cutting tip. The detecting device is connected to the metal detector via coaxial-cable。It can get the inductive signal of the height between cutting tip and material(such as steel)。The sensor can send out corresponding signal to logic control circuit after dealing with the information by inner circuit in control box.

Then the control box sends the controlling signal to drive circuit. The lifter motor will run positively and negatively using PWM mode. Mains supply of control box is AC24V. Signal consists of: UP/DOWN, AUTO/Manual, Long-distance height adjustment, Common Ground and Sensor inductive signal.

Lifter motor Power supply is DC24V.

2.2 Dimensions



Attention: Mains supply is AC24V or DC24V, Please get ready a isolated power supply for control box. Do not share the power supply with others.

2.3 Technical parameter：

Mains supply：AC24V/DC24V±10%

Lifter motor：DC24V

Output current：1A-4A

Env.Temperature：Control box -10 ∽ 60℃

HF-coaxial-cable：-55 ∽ 200℃

the parts of sensor：-10∽350℃

Accuracy：±0.2mm

Sensor distance：5mm—30mm to workpiece, adjustable

MAX power output：100W

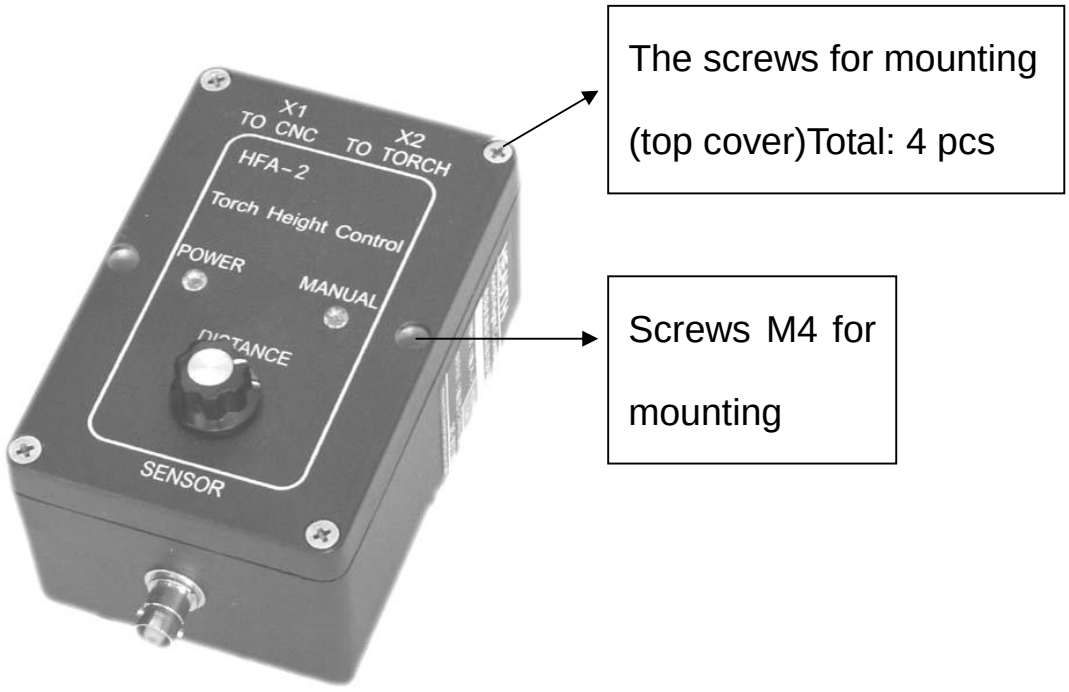
Length of HF cable：1000MM

Dimension：120mm X 80mm X 55mm (W x H x D)

3. INSTALLATION：

3.1 Installation instructions

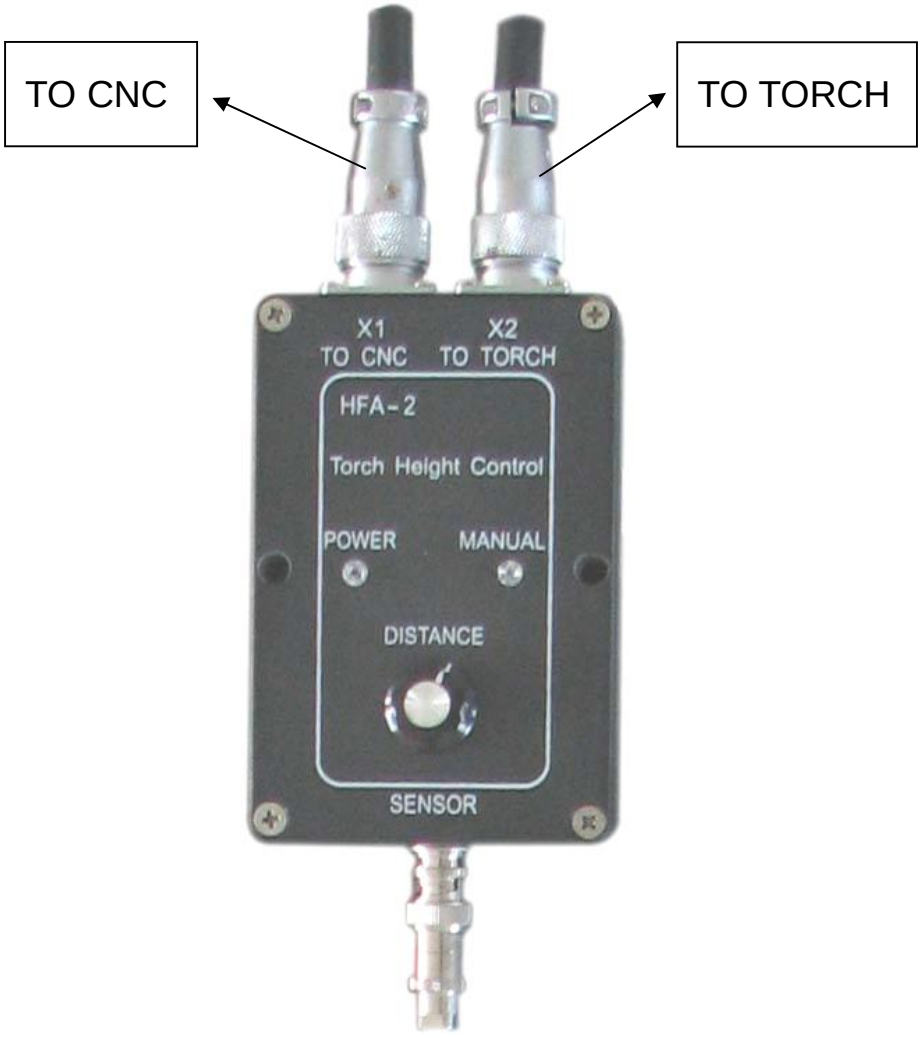
Mounting the control box：The control box should be mounted above the cutting torch. Please refer to the outline of control box as Picture You can fix the control box by the 2 hole for screws M4 in the Front panel.



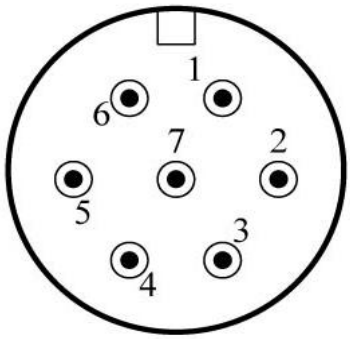
Mounting the sensor Part：the position of the sensor ring should be 1∽2mm lower than the cutting torch to avoid bumping during the working and reduce the edge effect when cutting the edge of materials. The controller will lift up to protect the cutting torch when sensor or any HF-cable(any part of sensor device) was broken.

3.2 Control connection：

The aerial receptacle marks X1（TO CNC）is positive. It can connect to CNC system with 7 pins. Please refer to the “control connection” about the description of each pin. The aerial receptacle marks X2 （TO TORCH）is positive. It can connect to cutting torch system.5 pins. Please refer to the “control connection” about the description of each pin.

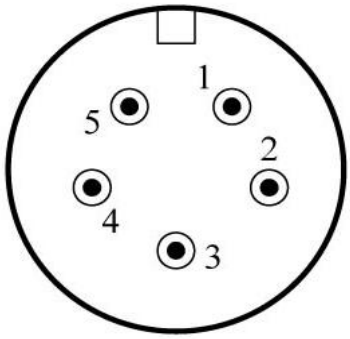


X1-TO CNC



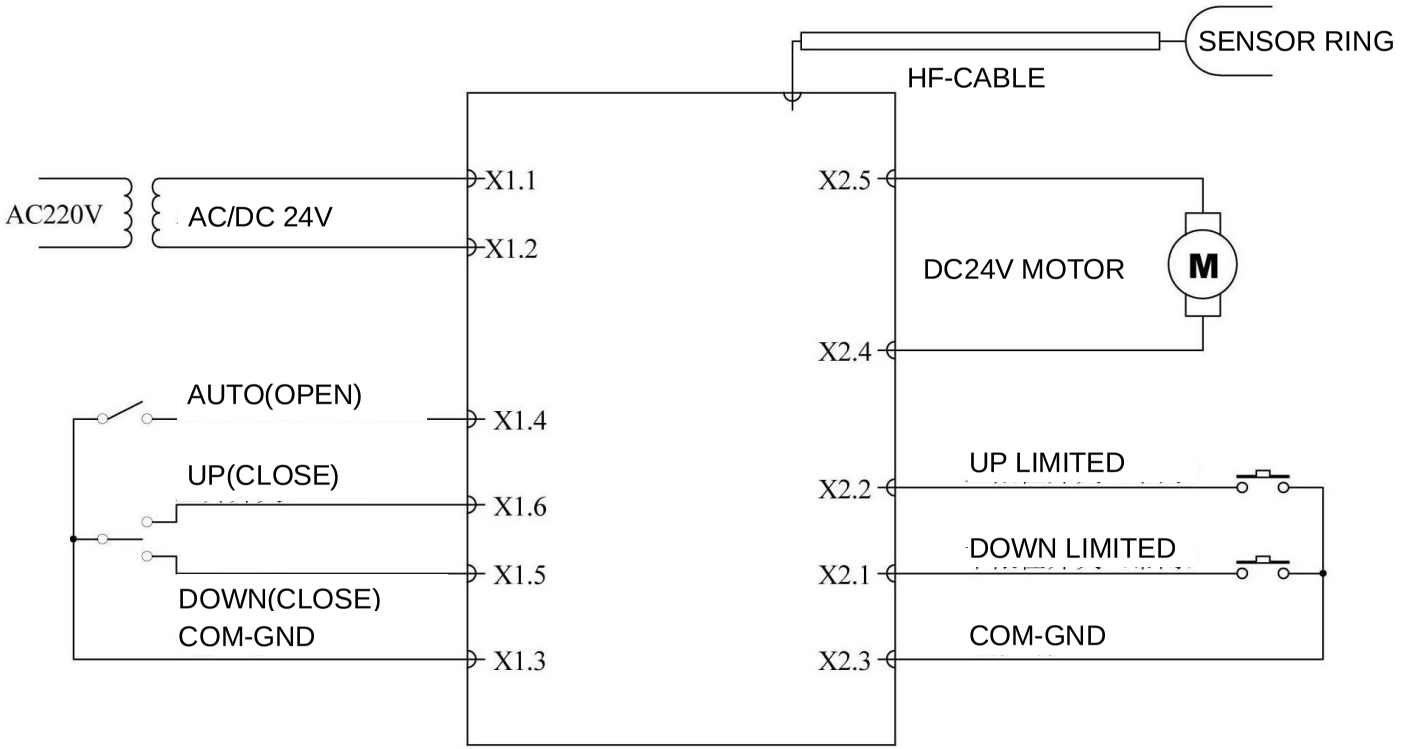
1	AC/DC 24V
2	AC/DC 24V
3	COM-GND
4	AUTO/MANUAL
5	DOWN
6	UP
7	NC

X2-TO TORCH



1	DOWN LIMITED
2	UP LIMITED
3	COM-GND
4	DC24V MOTOR
5	DC24V MOTOR

电气连接



http://www.heavth.com

3.3 Debugging

The power supply is AC/DC24V, the control signal has “UP”, “DOWN”, “AUTO / Manual” and sensor signal. When the “UP” and “DOWN” signal connect with COMMON GND, the motor will get moving UPWARD or DOWNWARD with manual speed. When the "AUTO / Manual” signal connects with GND, the controller is on “Manual” status. When Break off, it is available to adjust the height automatically. Meanwhile, if the sensor ring do not connect with controller, the cutting torch will run toward the material all along. If the sensor and controller are connected well, the motor will stop at some position via adjusting the "HEIGHT" adjustment .

Pay Attention To: if any part of sensor device is disconnecting, the torch will be up until up limited sw is effective. The “Height” adjustment controls the height of the cutting torch under “AUTO” status. When adjust it for the first time, this adjustment should be adjusted cw (clockwise) to Max position. The height is the highest now.

Otherwise, it is easily for cutting torch to get touch on the materials. Circumgy rating the “HEIGHT” adjustment ccw, the height will get lower. If the height is enough low for cutting torch to touch the material, the motor will be shaking. Anyway, the

motor will get steady none but the cutting torch is near the balance point (with 0.2mm below or above it). So the system will drive the motor to move the cutting torch to the balance point when it is not at the balance point. The character of movement is Lower speed when it approaches the balance, the faster when it is far away there. The sensitivity is complying with the technical data when the height is 5∽20mm between cutting torch and material. Under Automatic balance status, adjust the “HEIGHT” adjustment ccw, the cutting torch will move down; On opposite, it will move up. Then you can get to the suitable position.

3.4 Inner Parameters

This controller before delivery, the preset parameters can match most of the torch lifter,

Adjust the manual speed:

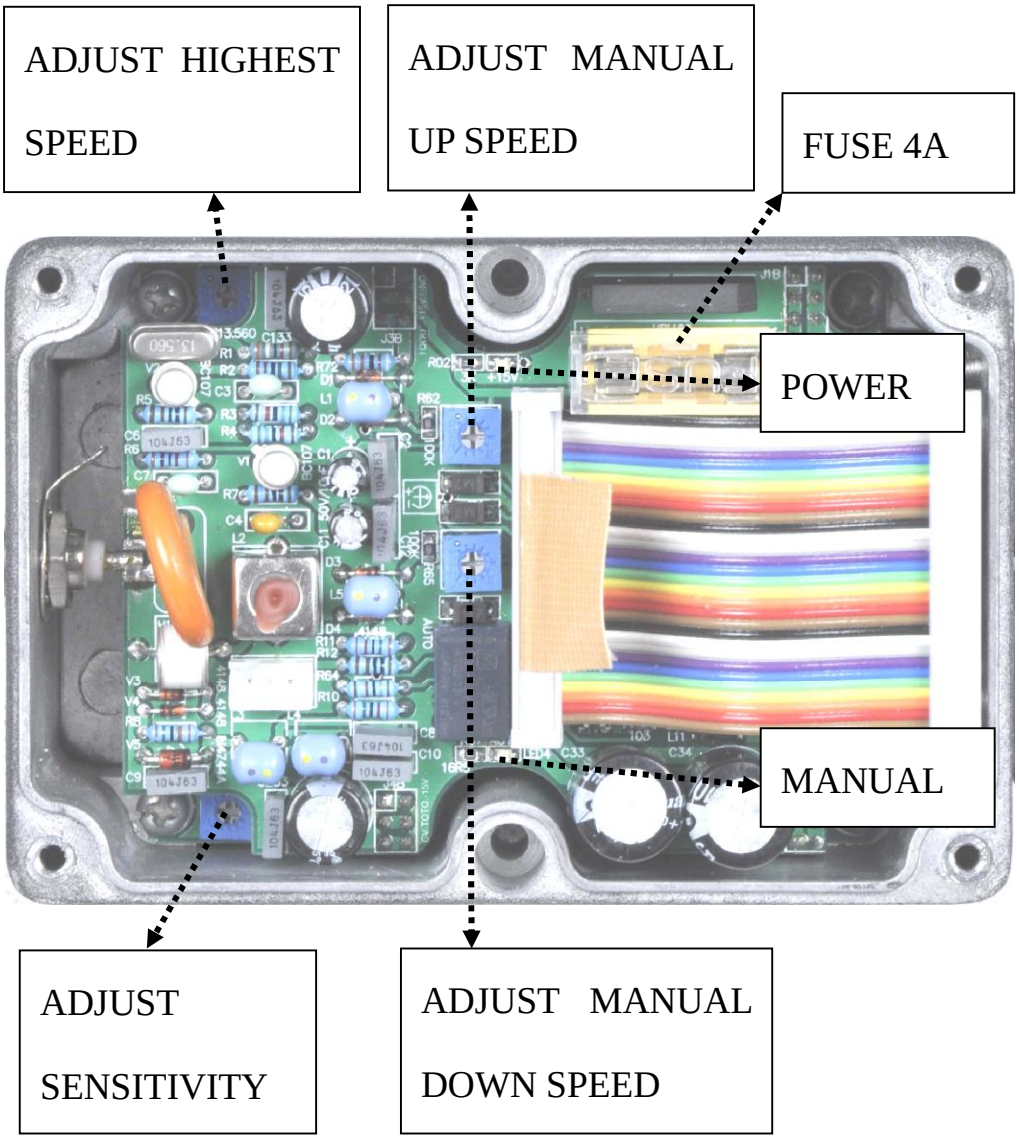
Clockwise, slow down. Counterclockwise, accelerate.

The highest speed limit:

Clockwise, accelerate. Counterclockwise, slow down.

Adjust the sensitivity:

Clockwise, slow down. Counterclockwise, accelerate.


ADJUST HIGHEST SPEED
ADJUST MANUAL UP SPEED
FUSE 4A
POWER
MANUAL
ADJUST SENSITIVITY
ADJUST MANUAL DOWN SPEED