

## **THCSA200**

# **Capacitive sensor plasma & Oxy-fuel Torch Height Control**

### **Features**

- 1) Stand alone controller for THC & OHC completely independent from CNC computer software or CNC control system
- 2) closed-loop control system, DC motor driven with pulse width modulation
- 3) Signal processed at 4 stages Position Signal Sensing, Signal Process, Logic Control and Motor Drive
- 4) Analog signal processed by stand alone controller circuit to Logic Control circuit and then Motor Driver circuit
- 5) Sensing signal generated by capacitive sensor
- 6) Insulated Sensor ring which is sense the height between torch and metal working piece
- 7) Circuit-broken protection on Auto Mode torch will lift up automatically in case HF cable disconnected, open circuit, short circuit protecting the torch from diving into the working piece
- 8) Enclosure designed for waterproof, dustproof, shock proof.
- 9) Circuit-protection design greatly improved the ability of anti-jamming, voltage surge, harmonic wave, pressure sensitive circuit protection, over voltage protection, self-recovery circuit
- 10) External user height setting & internal adjustable resistor for over height
- 11) Hook up fixture, insulated ring sensor handle, ring sensor, HF cable & connectors
- 12) Works with both CNC Plasma & OXY-Fuel machines

### **Specification**

- 1) Power Supply AC24V $\pm$ 10% , 50Hz/60Hz
- 2) Motor driving output current : 1A-4A
- 3) Working temperature 10 ~ 60
- 4) High frequency coaxial-cable : -10 ~ 200
- 5) Height accuracy :  $\pm$ 0.2mm
- 6) Adjustment range within accuracy from the surface of the working piece 1mm ~20mm
- 7) Max output power 100W
- 8) Length of HF-cable 200mm ~ 1000mm max
- 9) controller dimension Length x Width x Height 200mm x 104mm x 50mm

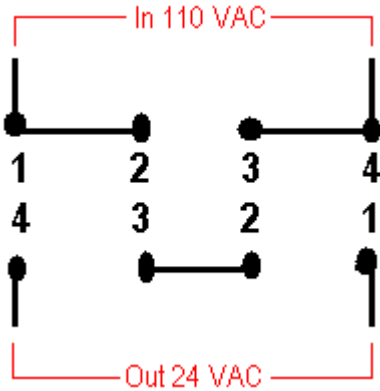
### **Options**

- 1) DC motor
- 2) Proximity limit switch
- 3) Complete Mechanical Z axis with gearbox
- 4) Power supply output AC 24V, input 110/220V with CSA or CE compliance
- 5) Ready to plug in including Pre-wiring, motor, power supply, 2 proximity switches (All electronics)
- 6) Ready to go plug in and install on your CNC machine, including (All electronics section 5 & Z axis mechanics & gearbox)

## THC Torch Height Controller

### 1- Wiring of PHXPG transformer 110 to 24 VAC (not included with THC)

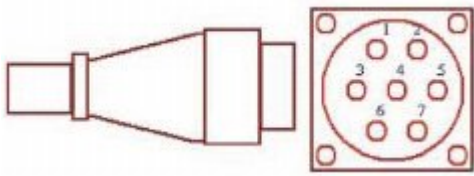
Transform can be bought from [www.automationdirect.com](http://www.automationdirect.com) item code PH100PG



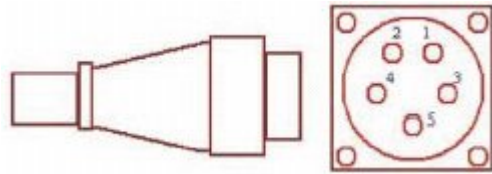
Voltmeter should measure 24 VAC from pin 1 & 4

See more about wiring on transformer document PHXPG.PDF page 2

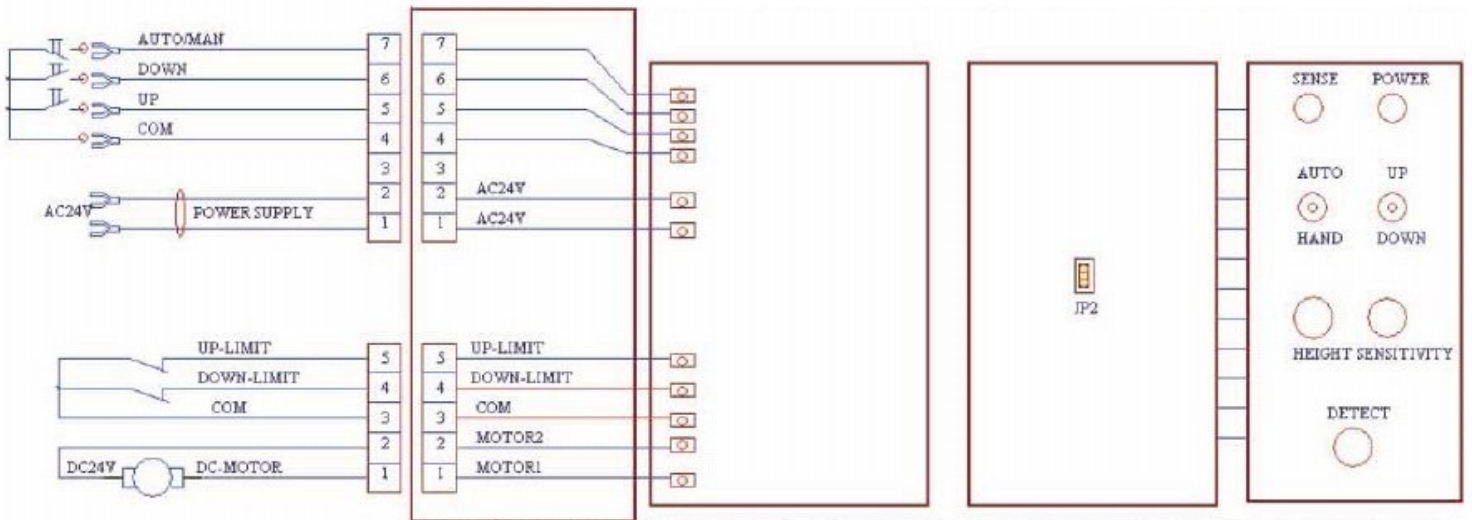
2- Wiring of THC controller



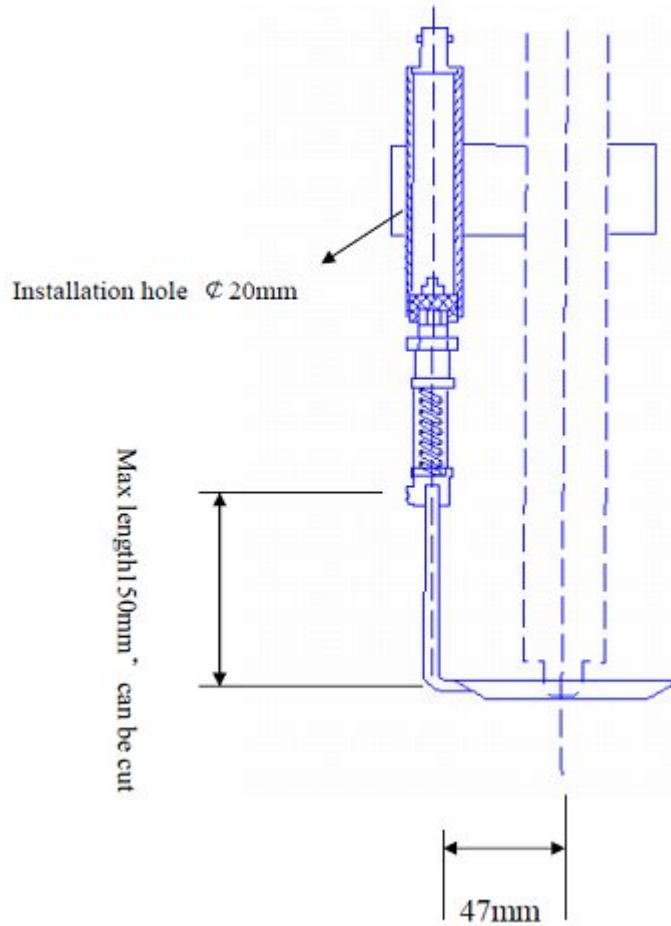
7 pins aviation socket



5 pins aviation socket



### 3- Mechanical installation of THC Sensor



THC Picture 1.1

#### 4- Mechanical assembly of THC controller

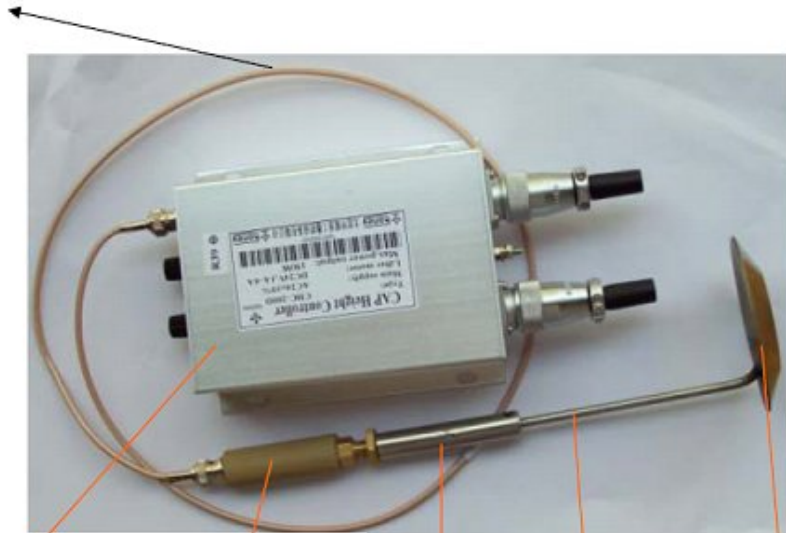
Use the holding fixture as the picture below hold one side of fixture to plasma torch and the other side to the insulated installation handler  
Bolt the elastic connector to the insulated handler  
Bolt the sensor ring to the elastic connector see THC Picture 1.1 & 1.2



THC Picture 1.2

Install THC Controller on the back of Z axis  
Wire HF Cable from THC controller to the insulated installation handler see THC Picture 1.3

HF cable



Control module of THC

Elastic connector

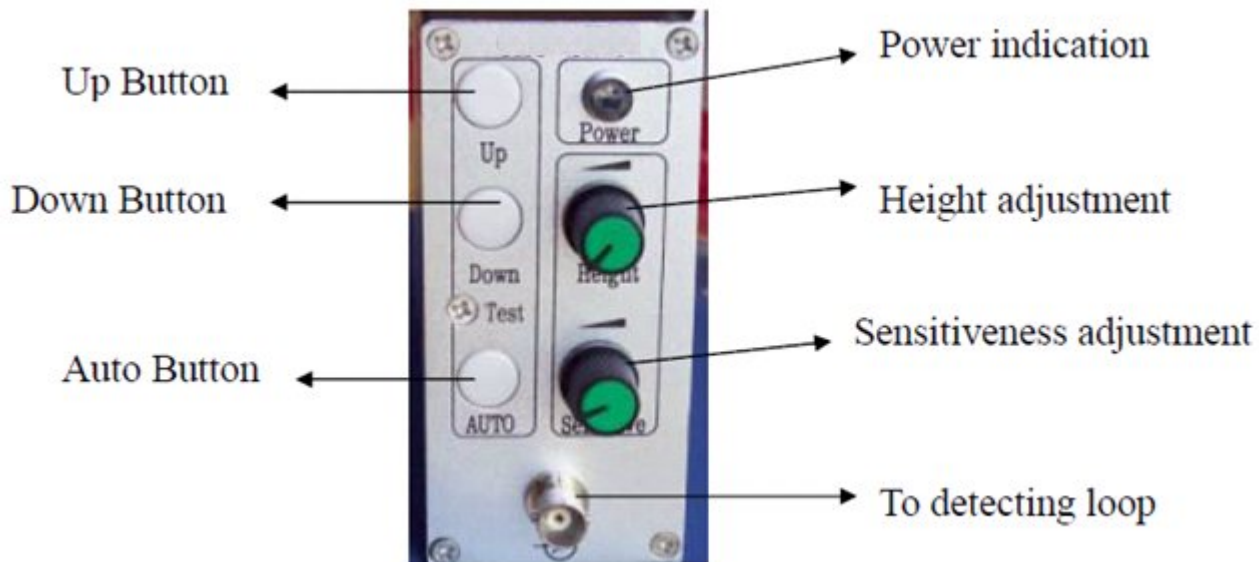
Sensor ring

Fixing handle

Connecting lever

THC Picture 1.3

## 5- Operation of THC controller



THC Picture 1.4

### Auto Button

Auto means the Z axis height will adjust automatically during operation

Wire socket pin 4 to socket pin 7 for auto control or

A push button switch can be used to switch between auto & manual mode

### Up/Down Button

Up will move Z axis up Down will move Z axis down

Limit switches should be installed on the upper & lower limits of Z axis, once the Z axis hit any of them it will stop.

### Height

It is used to adjust cutting torch height during Auto Mode. Height increases when it is turned clockwise. At the first commissioning, turn clockwise maximum to reach the highest height.

### Sensitiveness

On Auto Mode, the Sensitiveness increases when it is turned clockwise.

Note when the sensor detects the metal the motor will be in closed loop status the motor sound can be heard like it is enforced to keep in that position indicating that the loop was detected, by moving the XY the Z axis will be adjusted automatically.