

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

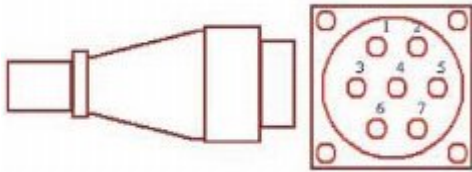
Specification

- 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 ~ 1000m max
- 9) controller dimension Length x Width x Height 200mm x 104mm x 50mm

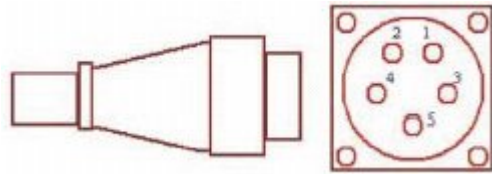
Options

- 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)

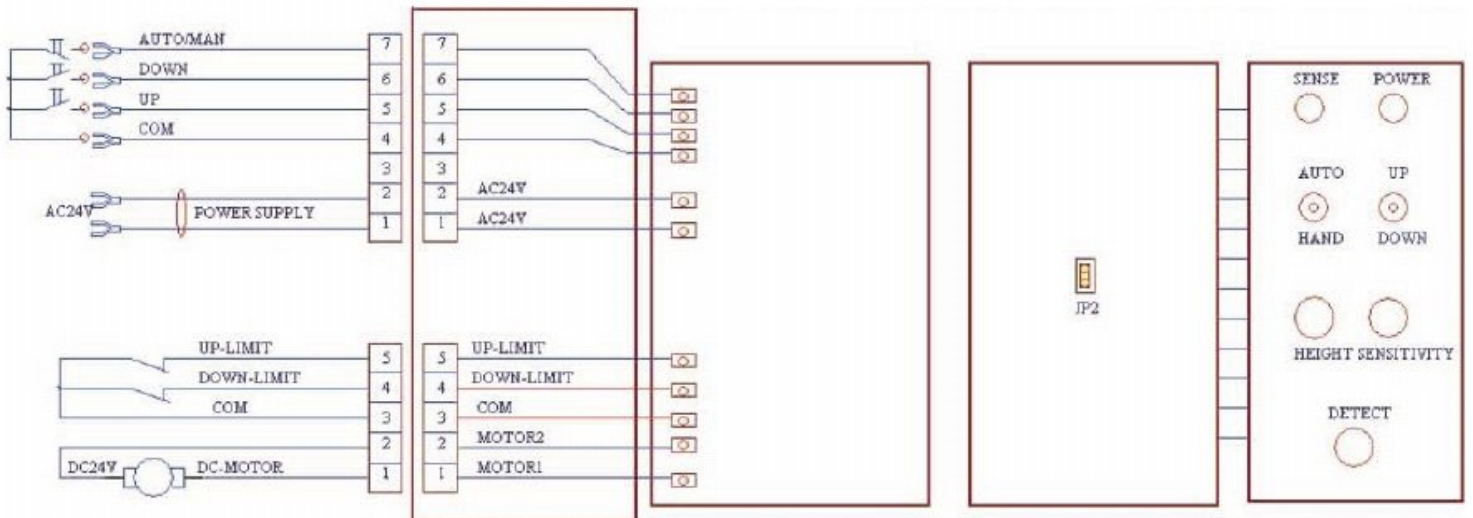
2- Wiring of THC controller



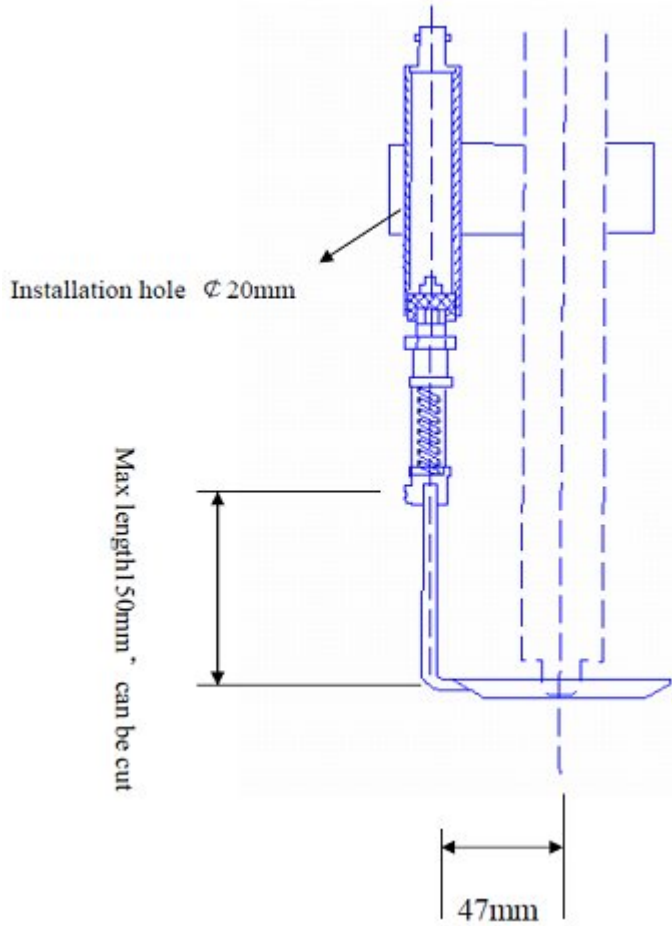
7 pins aviation socket



5 pins aviation socket



3- Mechanical installation of THC Sensor



THC Picture 1.1

4- Mechanical assembly of THC controller

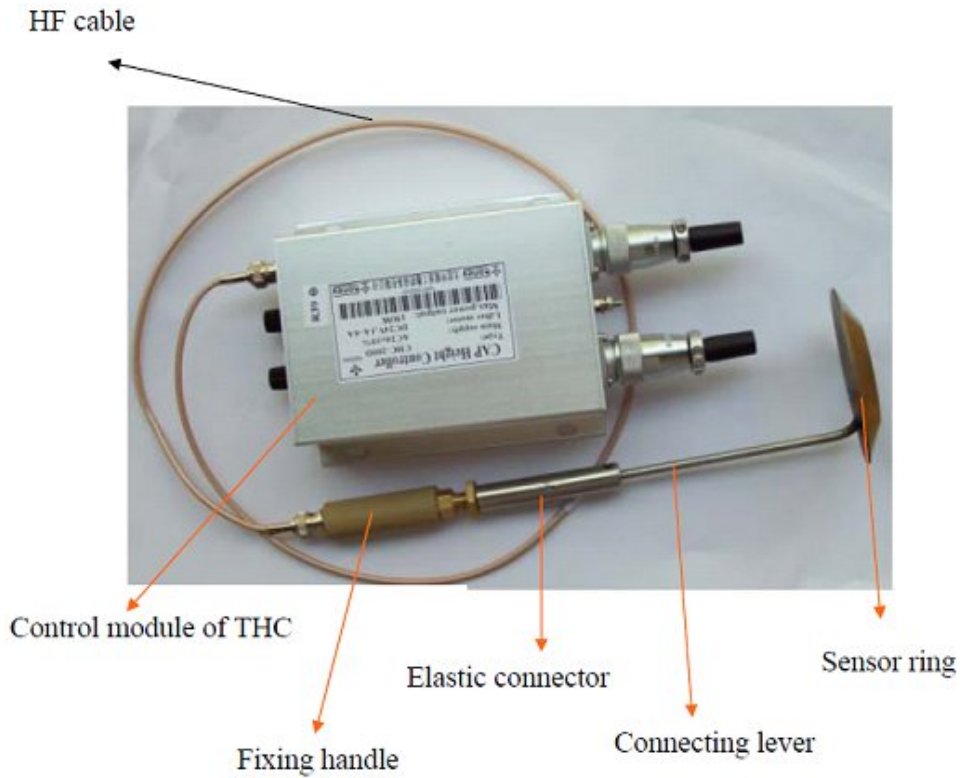
Use the holding fixture as the picture below hold one side of fixture to plasma torch
and the other side to the insulated installation handler
Bolt the elastic connector to the insulated handler
Bolt the sensor ring to the elastic connector see THC Picture 1.1 & 1.2



THC Picture 1.2

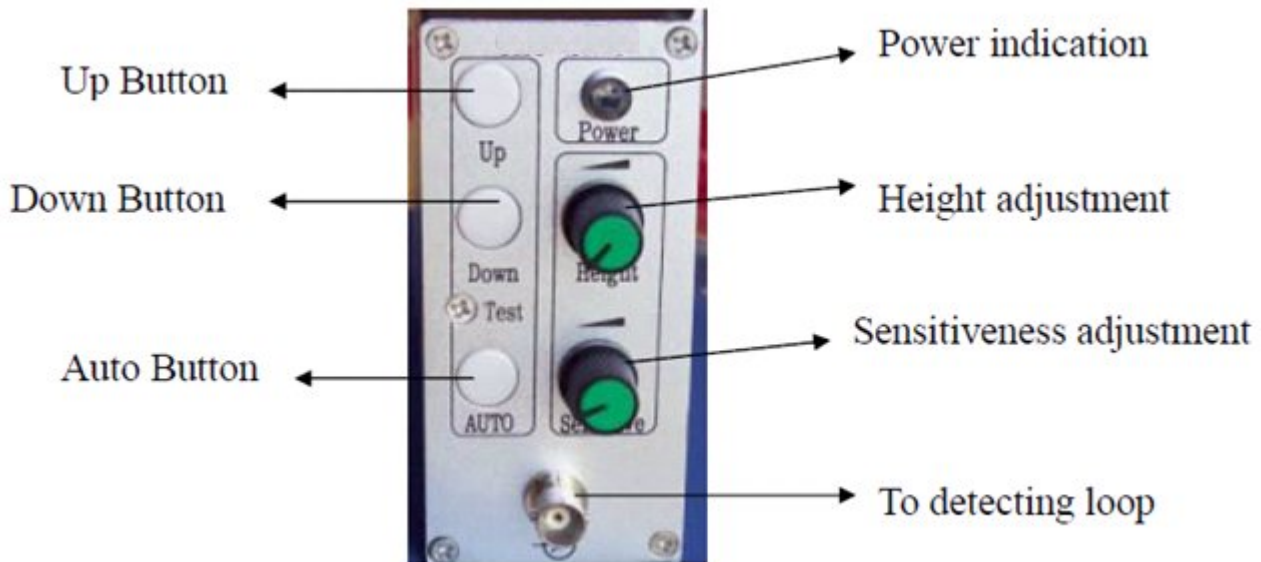
Install THC Controller on the back of Z axis

Wire HF Cable from THC controller to the insulated installation handler see THC Picture 1.3



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

Socket7

Connect pin 4 to pin 7 for auto control

Disconnect pin4 from pin7 for manual control

Up/Down Button

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

Connect pin 5 to pin 7 to activate the Z axis UP function

Connect pin 6 to pin 7 to activate the Z axis DOWN function

Socket5

Connect pin5 & pin4 to pin3 to activate the THC

During real operation these two pins should be connected to a limit switch to limit the Z axis movement up/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.

Operation

To perform the right operation and avoid crashing the ring sensor or torch into the sheet metal being cut make sure you follow the below instructions

- 1- Set THC to manual mode
- 2- Set sensitivity POT to half
- 3- Set height POT to $\frac{3}{4}$
- 4- Make sure there is a metal piece down facing the ring sensor
- 5- Look at the mechanical installation in page 4 and make sure the OXY or Plasma torch is installed the same way
- 6- Still on manual mode move up the ring one inch higher above the metal, turn on auto mode keep your hand on the up button so you can move up the Z axis to avoid crashing the ring sensor with the metal, the Z axis will start going down you will notice that the Z axis speed increase if sensitivity POT turned high and decrease if sensitivity POT turned low.
- 7- Set the desired height for piercing and the job is ready to start THC will take control to change the THC height during job running.