# T12 solder station vs JBC mini - PAT-MAIN

Autor:
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**Les puntes del soldador petit de JBC son de la mateixa mida (diam 3,3 mm i 5 mm més llargs de la canya foradada)**

**el soldador complet de la foto val 1,90€!!!!!**
**el controlador senzill de la foto val 3,90€!!!!!**

**Els de Aliexpress tambe ho tenen,pero lo mes important (crec) es que s'hi puguin posar puntes de JBC pues aguanten perfectament mes de 400 graus son intercambiables i duren molt**

ARTICLES

T12 - solder station vs JBC mini
T12 - solder station - Hakko 936

T12 - HAKKO (907ESD) and SOLOMON (SL-10/30)
T12 - I2C SPI OLED Display

T12 - STC15F204 NRF24L01 wireless UART

- 105 GBP Finished Soldering station

Patent: Soldering apparatus with safety device

..There is a 1999 patent for the safety application of a vibration sensor switch to trigger the auto-sleep mode, therefore all shops they want to sell it, they supply it separately..

United States Patent 6111222

Abstract:

A soldering apparatus with a safety device which operates automatically when a soldering iron is left in its on condition for a given period of time. A vibration sensor is attached to the soldering iron to sense vibrations of the soldering iron during soldering work. A heater control circuit is provided to be switched to a low-temperature mode when a period of time for which the vibration sensor does not sense the vibrations of the soldering iron continuously exceeding a set

value, thereby maintaining the soldering iron at a predetermined low temperature in this situation.

Tyical application of SW-18010P (Vibration switch connected in series with the PTC Iron sensor)

STATION SLEEP FUNCTION
The Soldering Iron is equipped with a vibration sensor. When the soldering iron is "kept static" (no movement) the sensor switches to OFF and the system begins a count down of the sleep timer. The suffix will change to a small letter “d” to indicate that the system is preparing to enter sleep mode. The display will show four dashes “- - - - “ to indicate whenthe system has entered sleep mode. To wake the system, simply lift up the soldering iron or push any control button.

MAIN CONCEPTS..

Sw-18020P/Sw-18010P Vibration Switch => starts timer to sleep mode

T12-Oled-Disp-
STC15F204EA
TL431-shunt regulator
LM358 - Op-amp

STD10PF06-PChannel (Powr Mos-FET)

BT137_PHI (triac)
DS18B20 - Digital Thermometer TO-92 IC Sensor

The tips of the small welder JBC-mini are of the same size (diam. 4 mm and 5 mm longer the hollow shaft)

The full iron handle costs only € 1.90 !!!!!
The simplest controller -3rd example- costs only € 3.90 !!!!!
Those of Aliexpress also have it, but the most important thing (I think) is that they can fit JBC tips as they stand perfectly more than 400 degrees, they are interchangeable and have a very long life

SW-18020P Electronic Shaking Switch Vibration Sensor

Description

SW-18010P Vibration sensor is a spring-type non-directional vibration sensing devices, which can be triggered at any angle.
When being at rest the sensor is in open OFF state, when subjected to environement movement, the deformation of the spring makes a contact to the center electrode connecting the two pins to the ON state, when not in movement, the circuit goes back to the open OFF state.

The normal life of the product is More than 20 million times & is suitable for small current vibration detection circuit, has been widely used: toys, shoes, lamps, anti-theft alarm, electronic scales, Thunderbolt roller skates, flashing shoes, flames round, flashing ball, etc.

Specifications

Maximum working voltage (Vmax) : 12V.
Maximum current (Imax) : less than 5mA.
Open circuit resistance: more than 10m Ohm
On resistance: less than 5ohm.
Ambient temperature: less than 100?.
Life expectancy: 500000 times.
Can be used in any angle or orientation

Do not exceed voltage and current, otherwise you will burn out the internal sensing coil !

See: applications and technical description

https://www.adafruit.com/product/1766

See photographs for best description of cosmetic condition and style.

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TYPES..

SW-18030P - Slow Vibration Sensor Switch (Hard to trigger)

The "poor man's" accelerometer/motion sensor! These spring-vibration switches are low sensitivity non-directional vibration induced trigger switches. Inside is a stiff spring coiled around a long metal pin. When the switch is moved, the spring touches the center pole to make contact. So, when there's motion, the two pins will act like a closed switch. When everything is still, the switch is open. Great for basic projects and wearables!

SW-18020P- Medium Vibration Sensor Switch

The "poor man's" accelerometer/motion sensor! These spring-vibration switches are medium sensitivity non-directional vibration induced trigger switches. Inside is a medium hardness spring coiled around a long metal pin. When the switch

is moved, the spring touches the center pole to make contact. So, when there's motion, the two pins will act like a closed switch. When everything is still, the switch is open. Great for basic projects and wearables!

There is a version with a stiffer spring, which is harder to trigger, and a version with a very soft spring, which is easier to trigger!

SW-18010P - Fast Vibration Sensor Switch (Easy to trigger - Used in soldering irons-)

The "poor man's" accelerometer/motion sensor! These spring-vibration switches are high sensitivity non-directional vibration induced trigger switches. Inside is a very soft spring coiled around a long metal pin. When the switch is moved, the spring touches the center pole to make contact. So, when there's motion, the two pins will act like a closed switch. When everything is still, the switch is open. Great for basic projects and wearables!

There is a version with a slightly stiffer spring which makes it harder to trigger, and a version with a much more stiff spring which is even harder to trigger!

MS-100906 - Tilt ball switch

The "poor man's" accelerometer! Tilt sensors are switches that can detect basic motion/orientation. The metal tube has a little metal ball that rolls around in it, when its tilted upright, the ball rolls onto the contacts sticking out of end and shorts them together.

Miscelaneous...

ADXL345 - Triple-Axis Accelerometer (+-2g/4g/8g/16g) w/ I2C/SPI

ADXL335 - 5V ready triple-axis accelerometer (+-3g analog out)

Hall effect sensor

Round Force-Sensitive Resistor (FSR

Adafruit VL53L0X Time of Flight Distance Sensor - ~30 to 1000mm

HAKKO (907ESD) and SOLOMON (SL-10/30) soldering iron driver
by arhi » Wed Jun 22, 2011 11:19 am

www.histo.cat/e/t12-hakko-907esd-and-solomon-sl-10-30-

Ali express Oled controler and Ali expres aluminium box

Upgrades from v1
1. thermocouple is read properly. The circuit used to get the K-type to go 0-5V came from microchip's app note
2. 3 buttons are replaced with rotary encoderer with button
3.DS18B20 is added to read ambient temperature (thermistor returns difference in temp between hot and cold join so you need to know temperature of the cold join to know what is the temp of the tip. I decided to go with DS18B20 because I just figured out I have 10+ of those in the drawer)

Chinese Soldering Iron Driver (Warning/Info Search)

I believe that the first item (0) item 4 is to do with selecting the sleep switch, either microswitch or vibration sensor. And I can see there is some sort of temperature probe setting, adjusting PID perhaps.

Mini digi-solder (PTC sensor)

http://www.ebay.co.uk/itm/272797746851

Schematics

Kit schematics

Kit PTC sensor caixa barata 9€ amb 2-opt.controllers

http://www.ebay.co.uk/itm/321913108315

Specifications:
PCB input voltage:12-24V
PCB Size:6.7x2.5x2.3cm
Internal parameters:
ADC P01 reference voltage (obtained by TL431)
NTC P02 correction (by setting the temperature to the lowest number of observations).
P03 op amp input offset voltage correction value
P04 thermocouple amplifier gain

PID P05 parameter pGain
PID P06 parameter iGain
PID P07 parameter dGain
P08 automatic shutdown time 3-50 minutes
P09 restore factory settings
P10 encoderer temperature step (1-100)
P11 temperature calibration, input 0 to give up modification,
input 1 of the thermocouple amplifier gain for editing

Package include:
1xPCB board
1xKnob
1xVibration switch
1xHeating indicator LED
1xFive core plug

http://www.ebay.co.uk/itm/322573110446

Features
--DIY electric controller board with English Display, 5 seconds fast tin, excellent workmanship, quality and stability, strong power, freely adjust the sleep time to 30 minutes, black brushed aluminum casing, black acrylic panels, beautiful appearance, large joints is no longer a problem

Specifications

Working AC voltage: 12-24V
Temperature setting range: 150-480 degree, the actual temperature can be 500 degrees
Sleep Time 1-30 minutes freely adjust
SIZE:Length:60mm Wide:27mm

Size: 23x58mm
Suitable For: HAKKO T12 Digital Soldering Iron Station
Temperature STC oled Controller
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PCB input voltage:12-24V
PCB Size:6.7x2.5x2.3cm
Internal parameters:
ADC P01 reference voltage (obtained by TL431)
NTC P02 correction (by setting the temperature to
the lowest number of observations).
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PID P07 parameter dGain
P08 automatic shutdown time 3-50 minutes
P09 restore factory settings

P10 encoderer temperature step (1-100)
P11 temperature calibration, input 0 to give up modification,
input 1 of the thermocouple amplifier gain for editing
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Basic operation

Normal mode, the rotary encoderer to adjust the temperature, slow turn, every 1 degree grid, fast forward 5 degrees per division.
In normal mode, short-press the encoder-button to enter sleep mode, any encoderer operation will quit sleep mode, if the vibration enabled => touch handle to exit sleep mode.
In normal mode, double-click on the encoder-button to enter the enhanced mode, any action the encoderer exits.
In sleep mode, press the encoder-button to Power-off & to Power-on, press it again or press the power button.
In normal mode, press the encoder-button to enter the menu setting mode.
If being for a long time without entering the sleep mode, if no longer into shutdown mode, then press twice encoder-button to enter the menu (can be set ).

Detailed menu settings:

Reference voltage, of the system in mV. Corresponding to the control board TL431 (shunt regulator) consistent voltage, it is recommended to keep the factory parameters.
Offset voltage. Corresponding to the control board op amp offset voltage, software correction value, the control board using the op amp offset is small, it is recommended to keep the factory parameters.
Gain adjustment (thermocouple ). Corresponding to the control board's op-amp amplification, it is recommended to keep the factory parameters.
Temperature calibration. System for 350 degrees, global temperature calibration. Other points based on linear temperature correction after entering the temperature calibration, corresponding to a professional temperature measurement equipment, adjust parameters slowly until the temperature is 350 degrees. When the actual measurement calibration is finished, press Exit.
Wakeup setting: 0.- Do not allow wakeup, 1.- Vibration at the iron handle and encoder-button operations can wakeup the system from sleep. 2.- Allow wakeup only by using the system hibernation encoder-button
Sleep time. No action, the system enters automatically sleep time, in X minutes.
Shutdown time. Sleep, no automatic shutdown wait time in minutes.
Temperature strengthening. After entering the temperature set to strengthen, increase the temperature set value at the current temperature, in degrees Celsius.
Strengthening time. After entering the temperature corresponding to strengthen, how long automatic withdrawal temperature enhanced mode. In seconds.
Alert setup. 1.- allowing beep, 0.- turn off the buzzer.
Restore factory default. 1.- restore the default parameters, 0.- do not restore default parameters

Packing Includes

1x Oled Digital controller
1x 5 pin Aviation plug
1x Ball vibration Switch
1x NTC resistor - thermistor

1x knob
1x display panel

http://www.ebay.co.uk/itm/322551691385

http://www.ebay.co.uk/itm/122595570534

Product Description

Specification :

Material : Aluminum Alloy

size:140*90*40mm

internal space:134*79*34(mm)

small size, convenient to carry .

weight :250g

Package included :

1 x T12 Digital Soldering Iron Station aluminum shell case (only the shell,not included other accessory)

KIT III
Kit barato - expansive case

http://www.ebay.co.uk/itm/263045514502

Details

1. AC 24V 3A adapter OR transformer.

2. HAKKO 907 compatible Iron Handle, A1321  Heating core

3. Power consumption :60W

4. Input voltage :AC 24V

5. Temperature range :200 ~ 480 deg C ( 392 ~896 deg F)

6.Conector: 5pin Female (as the picture shows tpye A)

Specs

Size: approx. 10*7*0.15cm

Color: as picture shows

The heating wire resistance: 2.5-3.5 ?

Sensor resistance: 43-58?

Heating wire: 4, 5 feet

Sensor: 1, 2 feet

Application: only for 1321 heating core

The performance of dual IC is stable, and the circuit board is required to communicate with the 24V, but the error is not a problem. The power of the transformer with circuit board is better, the faster the temperature is.

Note:

The circuit board can only be equipped with A1321 type heating core, please first confirm your iron handle is what type of heater.

Please allow 1-5mm errors due to manual measurement

Package included:
1 X Controller + Panel Board for HAKKO 936 Soldering Iron Station 907 A1321 Core A

https://www.ebay.co.uk/itm/283638768223

http://www.ebay.co.uk/itm/281907917810

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5x(2PCS DALLAS DS18B20 18B20 TO-92 Thermometer Temperature Sensor BT

5x 100% brand new and high quality.
Unique 1-Wire Interface Requires Only One Port Pin for Communication
Each Device Has A Unique 64-Bit Serial Code Stored In An On-Board Rom
Requires No External Components
Thermometer Resolution is User Selectable from 9 to 12 Bits
Item Description:
100% brand new and high quality.
Unique 1-Wire Interface Requires Only One Port Pin for Communication
Each Device Has A Unique 64-Bit Serial Code Stored In An On-Board Rom
Requires No External Components
Thermometer Resolution is User Selectable from 9 to 12 Bits
Software Compatible with the DS1822
Applications: Thermostatic Controls, Industrial Systems, Consumer Products, Thermometers, or Any Thermally Sensitive System
Specifications:
Package: TO-92
Number of Pins :3
Voltage Supply: 3V~5.5V
Sensing Temperature: -55°C to +125°C
Accuracy : +/-1°C
package:
2 x 2PCS DALLAS DS18B20 18B20 TO-92 Thermometer Temperature Sensorprotettiva posteriore

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http://www.ebay.co.uk/itm/282606358360

Description:

100% Brand New and High Quality

Soldering Iron Station Temperature Controller for T12 Handle Circuit Board

Cabbage white T12 Control Board component parts. Interchangeable heads (Dashboard + sleeve)

This product can be installed in the handle, away from the high-pressure zone, away from the high-temperature zone, occupying minimal space power.

Can be used as two parts.
A, Control Board
B, Hot holder

Reference schematics:
Temperature control reference voltage control in 3mV-12mV (there will be a little error), greater control over the temperature range, and if the temperature range adjustment, refer to the following table, modify the corresponding resistor:

| R9 | R6 | min temperature | max temperature |
|---|---|---|---|
| 8.2R | 3.3K | 3.08mV | 12.4mV default |
| 12R | 5.1K | 3.98mV | 11.7mV |
| 12R | 5.6K | 3.8mV | 10.7mV |
| 15R | 7.5K | 4.3mV | 9.9mV |
| 16R | 10K | 4mV | 8.0mV |
| 18R | 10K | 4.5mV | 9.0mV |
| 20R | 10K | 5mV | 9.9mV |

Products updated a diode, pick the wrong line will not burn the circuit board.

Package Included:
1x• Control Board
1x• Potentiometer knob
1x• Two-color LED (red / green)

The controller board Words with English Display ,5 seconds fast tin, excellent workmanship, quality and stability, strong power, freely adjust the sleep time to 30 minutes, black brushed aluminum casing, black acrylic panels, beautiful appearance, large joints is no longer a problem

Working AC voltage: 100-240V

Temperature setting range: 150-480 degree, the actual temperature can be 500 degrees

Sleep Time 1-30 minutes freely adjust

SIZE:Length:60mm Wide:27mm

Special note: OLED soldering station on a new heater installed being given issue beeps, it does not matter two or three minutes like a new heater will have a process of adaptation, with the aged or used are not new heater temperature is within 5 degrees of beating is normal. After beating aging will be within 1 degree

Basic operation

1: Normal mode, the rotary encoderer to adjust the temperature, slow turn, every 1 degree grid, fast forward 5 degrees per division.

2: Under normal mode,short-press the encoderer to enter dormancy, any encoderer operation quit ,if the vibration mode is enabled, then the vibration handle to exit Hibernation.

3: normal mode, double-click on the encoderer to enter the enhanced mode, any action the encoderer exits.

4: In sleep mode, press the Mid-button off, power on again or press the power button.

5: normal mode, press the encoderer to enter the menu setting mode.

6: a long time without entering sleep mode, if not longer into shutdown mode, the two times can be set to enter the menu.

Detailed menu settings meanings:

1, the reference voltage, the system in mV. Corresponding to the control board TL431 voltage is consistent, it is recommended to keep the factory parameters.
2, the offset voltage. Corresponding to the control board op amp offset voltage, software correction value, the control board using the op amp offset is small, it is recommended to keep the factory parameters.
3, gain adjustment. Corresponding to the control board amplifier magnification, it is recommended to keep the factory parameters.
4, the temperature calibration. System for 350 degrees, the global temperature calibration. Other points based linear temperature correction after entering the temperature calibration, corresponding to a professional temperature measurement equipment, slow adjustment parameters until the temperature is 350 degrees for the actual measurement calibration is finished, press Exit.
5, the wakeup setting. 0 Do not allow wakeup, 1, vibrations at the handle and encoderer operations can wake up the system to sleep. 2, allowing only wake up the system hibernation encoderer.
6, sleep time. No action, the system automatically sleep time, in minutes.

7, the shutdown time. Sleep, no automatic shutdown wait time in minutes.
8, temperature strengthened. After entering the temperature set to strengthen, increase the temperature set value at the current temperature, in degrees Celsius.
9, strengthening time. After entering the temperature corresponding to strengthen, how long automatic withdrawal temperature enhanced mode. In seconds.
10, the alert setup. 1, allowing beep, 0, turn off the buzzer.
11, to restore the default. 1 to restore the default parameters, 0 no recovery parameters

Note:if you want this T12 OLED controller ,please open this link:T12 OLED controller

package include ''

100% Brand New

1xOLED Digital controller
1x Air head
1xBALL SWITCH
1xthermisto
1xknob
1x display panel

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The intention was to build the most universal soldering controller I can think of. It can drive any low voltage (upto 24V) iron with thermocouple or resistive sensor, in series with the heater, or separate.

Here is a short list of features:
- power: 9-28V, AC or DC
- 2 separate heater control channels
- 2 independent sensor inputs
- current source on any sensor input 3uA - 12mA, wuth 2 bands (x1, x16) and 256 steps per band
- flexible differential amplifier input selection
- amplifier gain from 0 to 750 in 256 steps
- negative offset selection in 1024 steps
- resistive instrument identification (upto 625 different instruments can be identified by 2 resistors on the connector)
- polynomial floating point voltage/resistance to temperature calculation

- wave shaping to filter out the inductive peaks from series sensor signal
- PID control with power limit
- isolated USB port for firmware updates and live data
- 128x64 OLED display with rich user interface.

Tested so far with:
- HAKKO T12/T15 (series TC)
- HAKKO FX8801 (PTC)
- PACE TD100 (series TC)
- JBC C245 (series or separate TC)
- JBC C210 (series TC)
- JBC Microtweezers (2 separate heaters, each with series TC)
- WELLER WSP80 (PTC) (This iron was sent to me by a reader of the thread for a previous version of the controller. Thanks, Jaroslaw)
- ERSA RT80 (series PTC/heater resistance)
- various chinese cheap irons with separate TC

Here are the schematics, gerbers and software (4 April 2017):

UniSolder52_Schematics.zip(332.36 KiB) Downloaded 4938 times

UniSolder52_gerber.rar(436.38 KiB) Downloaded 3139 times

UniSolder52_BOM.zip(13.47 KiB) Downloaded 3027 times

UniSolder52_Software.zip(1.37 MiB) Downloaded 1944 times

Update (4 April 2017): The PC Software is now entirely in C#, the front end is rewritten. Now you can program only the bootloader, and then use the software for firmware updates using the USB connection. The PC software also does not crash anymore when device is unplugged and plugged in the USB or turned on/off, and automatically switches to bootloader and back when uploading new firmware. Also, a legend with checkboxes is added for every data that is displayed on the graph, so you can switch it on or off. There is still pretty much work to be done on it, but at least it is much more functional now.
Added to the firmware are Pace TD100 Black and Weller WMRT profiles, some work is done on several other places. Now the firmware handles better some irons, where there was initial overshoot when heating for the first time or changing the target temperature.

Some movies:
JBC C245: https://www.youtube.com/watch?v=oTdQB4y ... e=youtu.be
JBC C210: https://www.youtube.com/watch?v=iyz-EDf ... e=youtu.be
T12, JBC C210, JBC Microtweezers: https://www.youtube.com/watch?v=-f0KSU0PJzc&t=70s
Chinese T12: https://www.youtube.com/watch?v=u588sh- ... e=youtu.be
Weller WSP80: https://www.youtube.com/watch?v=gd_8w7l ... e=youtu.be
Weller WMRT: https://www.youtube.com/watch?v=eHNJuQE ... e=youtu.be

A comparison of irons/tips used in the movies:

The calibration procedure:
- Connect a resistor with well known resistance (0.1%) of around 10ohm between SENSEA and Vout1-
- Go to "CALIBRATION" submenu
- Adjust the calibration trimmer until you get value of "R" as close as possible to the resistance of the resistor, multiplied

by 100 (1000 for  10ohm resistor).

On the left - calibration "fixture" with soldered 9.8ohm resistor, on the right - my connector layout:

Connections to different tips/irons:

1. HAKKO T12:
 - Outer shell, and heater negative (middle) terminal connected together to Vout1- and EARTH
 - heater positive (bottom terminal) connected to Vout1+ and SENSEA
 - 1k resistor between ID and Vout1-
 - 5.6k resistor between ID and Vout2-

2. HAKKO FX8801, HAKKO 907 (original, with PTC sensor):
- Outer shell, PTC negative  and heater negative connected to EARTH, Vout1- and SENSEB
- Heater positive connected to Vout1+
- PTC positive  connected to SENSEA
- 1k between ID and Vout1-
- 820ohm between ID and Vout2-

3. JBC C245:
 - Outer shell (green wire) connected to EARTH and SENSEB
 - Heater positive(red wire) connected to Vout1- and SENSEA
 - Heater negative(blue wire) connected to Vout1+
 - 150ohm between ID and Vout1-
 - 5.6k between ID and Vout2-

4. JBC C210:
 - Outer shell (green wire) connected to EARTH and SENSEB
 - Heater negative (middle terminal, blue wire) connected to Vout1-
 - Heater positive (smaller terminal, red wire) connected to Vout1+ and SENSEA
 - 3.0k between ID and Vout1-
 - 5.6k between ID and Vout2-

5. JBC Microtweezers:
 - Outer shell of both tips (green wire) connected to EARTH
 - Heater 1 negative (blue wire) connected to Vout1-
 - Heater 1 positive (red wire) connected to Vout1+ and SENSEA
 - Heater 2 negative (brown wire) connected to Vout2-
 - Heater 2 positive (yellow wire) connected to Vout2+ and SENSEB
 - 1.0k between ID and Vout1-

6. WELLER WSP80:
- Outer shell, PTC negative  and heater negative (white, black and brown wires) connected to EARTH, Vout1- and SENSEB
- Heater positive (blue wire) connected to Vout1+
- PTC positive (red wire) connected to SENSEA
- 120ohm between ID and Vout1-
- 5.6k between ID and Vout2-

7. ERSA RT80:
- Outer shell and Heater/PTC negative (pink and white wires) connected to EARTH, Vout1- and SENSEB
- Heater/PTC positive (black wire) connected to Vout1+ and SENSEA
- 300ohm between ID and Vout1-
- 110ohm between ID and Vout2-