A comparison of six electronic soldering stations

To the point

What should a soldering station be able to do and which features should it offer? We provide the answers to these questions on the following pages.

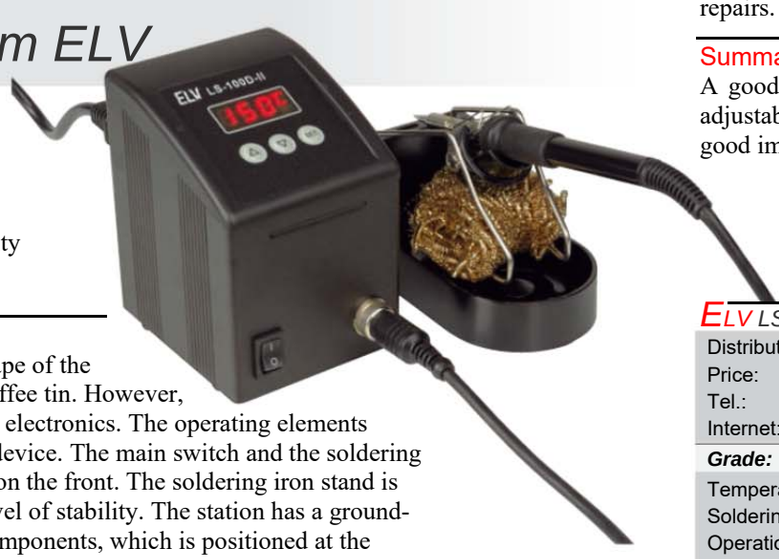
When soldering in the lab or workshop, this is usually performed using soldering stations. But why is this the case, when simple, mains-powered soldering irons that can be used with a range of different soldering tips are available at a very reasonable price? One main factor in favor of the soldering station is the possibility of adjusting the temperature. For soft soldering, the temperature should be between 150 °C and 450 °C, because some fluxes have a very low melting point and an only slightly higher boiling point (150–170 °C). The upper limit of 450 °C is the threshold value above which hard soldering begins. If a soldering station covers the specified temperature range, it is guaranteed to be able to cover the full range of soldering tasks known as soft soldering. Further advantages of a soldering station include, for example, that the soldering irons are smaller and therefore more easily guided. Electrostatic charges that build up during soldering can also usually be discharged via the station.

More than just appearance

It is true that in temperature-controlled soldering stations, there can be a big difference between the set temperature and the actual temperature at the soldering tip. This is because the set temperature refers to the heating element of the soldering iron. The shaft of the soldering tip is mounted on, in, or around the heating element and transfers heat to the tip. This can result in heat losses, which vary greatly depending on the size and shape of the soldering tip. As a rule of thumb, short, thick tips offer a more precise temperature and better heating capacity than long, narrow tips. Depending on the application of the device, you should therefore own two to three different soldering tips in order to create the most common soldered connections.

Entry level

LS-100D II from ELV



ELV is known among DIY enthusiasts and professionals alike as a supplier of high-quality components, devices and tools.

Features

At first glance, the compact shape of the LS-100D is reminiscent of a coffee tin. However, it is equipped with high-quality electronics. The operating elements can be found on the top of the device. The main switch and the soldering iron connection are positioned on the front. The soldering iron stand is free-standing and has a high level of stability. The station has a grounding screw to ground specific components, which is positioned at the bottom of the soldering station.

Test

The station can be assembled quickly. As soon as it is switched on, it heats the soldering iron to the preset temperature. The value ex works is 250 °C, but can be changed with a few touches of a button. The soldering iron sits comfortably in the hand and has a light weight of just 95 grams. The station's scope of delivery includes a long round tip. When working with the tip, it becomes evident that it has barely any heat reserves. In addition to a relatively high temperature difference between the set temperature and the actual temperature, the tip of the soldering iron has a low heat capacity. It is well suited for soldering and unsoldering small components, however, it is difficult to heat up older soldering joints, such as when making repairs.

Summary

A good soldering station that offers many adjustable parameters and gives an overall good impression when working.

ELV *LS-100D II, art no. 127047*

Distribution:			ELV, Leer (Germany)
Price:			approx. €90
Tel.:			+49 (0) 491 600888
Internet:			www.elv.de
Grade:			
Temperature:	35%	1.7	●●●●●○○
Soldering:	25%	1.7	●●●●●○○
Operation:	20%	1.5	●●●●●○○
Features:	20%	1.6	●●●●●○○

Evaluation:

- ⊕ Stability of the soldering iron stand/ temperature setting
- ⊖ Grounding screw

Entry level

Heimwerker Praxis 1/2018

1,6

Price/performance: Good

Entry level

55 W soldering station from Lux Tools

Heimwerker 1/18 Praxis Entry level

PRICE TIP

Lux Tools is a direct subsidiary of the OBI Group. We have often tested tools, devices, and machines from this company in our comparison tests, and they have always scored highly, so we were looking forward to testing this one.

Features

All the important components are located on the front of the soldering station. They are clearly aligned, and any user who has used a similar device before can immediately find their way around. For beginners, a single-page instruction manual provides an overview of the functions. This station's scope of delivery includes three different soldering tips. The soldering iron holder is stable, but the soldering iron is very wobbly in the holder, which incidentally is also easily loosened.

Test

The scope of delivery includes a round, long soldering tip, which we used for the test in order to create equivalent conditions for all stations. The machine heats the soldering iron rapidly to the value set on the setting wheel. On the mounted tip, the set temperature and the actual temperature at the tip were the closest in this test. Components can be soldered easily, while the heating of old soldering joints can be arduous. Tin-plating of larger surface areas can be performed effectively, while again the heating of older surfaces is more difficult.

Summary

A good station with an appropriate price/performance ratio, therefore named as our "Price tip" – congratulations!

Lux Tools *55 W soldering station Art. no. 4048161*

Distribution:			Emil Lux, Wermelskirchen (Germany)
Price:			approx. €64
Tel.:			+49 (0) 2196 76-4000
Internet:			www.lux-tools.com
Grade:			
Temperature:	35%	1.5	●●●●●○○
Soldering:	25%	1.7	●●●●●○○
Operation:	20%	1.6	●●●●●○○
Features:	20%	1.9	●●●○○○○

Evaluation:

- ⊕ Temperature of soldering tip / scope of delivery includes three soldering tips
- ⊖ Grounding screw

Entry level

Heimwerker Praxis 1/2018

1,7

Price/performance: Very good

Entry level

SIC-530 from Monacor

Monacor is a well-known electronics retailer based in Bremen that offers a wide range of products.

Features

This machine from Monacor is pretty much a classic. It has been available on the market for several years in unchanged form. The soldering iron temperature is set using a setting wheel and shown on the display. The display can be switched between the target and actual value. The SIC-530 is equipped with everything you need for your work, with the only exception of a grounding socket. The soldering iron stand is attached directly on top of the station. It can be positioned on the left or right, depending on where it is needed.

Test

The soldering iron is relatively large, but sits well in the hand. The long round tip transports the heat effectively to the soldering joint, but has low reserves. Components can be soldered and unsoldered easily, but larger, old soldering joints take some time. Tin-plating of printed circuit board tracks and cables is easy to do.

Summary

The classic product in this test line-up does the job reliably and without a great deal of frills. Fans of a slightly thicker soldering iron should definitely choose this machine.

Monacor *SIC-530, order no. 31.1640*

Distribution:	Monacor, Bremen (Germany)		
Price:	approx. €120		
Tel.:	+49 (0) 421 4865-0		
Internet:	www.monacor.de		
Grade:			
Temperature:	35%	1.5	●●●●○○
Soldering:	25%	1.7	●●●●○○
Operation:	20%	1.6	●●●●○○
Features:	20%	3.0	●○○○○○

Evaluation:
- ⊕ Temperature/handling
- ⊖ Temperature reserves

Entry level

Heimwerker Praxis 1/2018

Price/performance: Good

1,9

Entry level

ST-100A from Toolcraft

Toolcraft is an own-brand label of the electronics retailer Conrad from Hirschau. Products of this brand have often been awarded good marks in our tests in the past.

Features

This station is the only one in our test line-up to have just a single diode as a temperature display. The temperature is set using a setting wheel and the diode indicates the temperature status by lighting up, flashing or switching off. The soldering tip of the iron is round, long, and could be described as fine. It therefore has only a low heat capacity. The soldering iron holder is stable and holds the iron securely.

Test

Although the temperature setting is only approximate using the setting wheel, this is no problem since, as with all other stations, the difference between the set temperature and the actual value is quite large. The low temperature capacity of the soldering tip is a much greater annoyance. Soldering is still possible, but the iron rapidly reaches its limits during unsoldering.

The iron struggles with tin plating and it is only possible to heat old tin with a considerable temperature increase.

Summary

A good station, mainly suitable for precision soldering work. Users are recommended to purchase their own shorter and slightly thicker tip to improve the heat capacity.

Toolcraft *ST-100A*

Distribution:	Conrad, Hirschau (Germany)		
Price:	approx. €100		
Tel.:	+49 (0) 9604 408787		
Internet:	www.conrad.de		
Grade:			
Temperature:	35%	1.7	●●●●○○
Soldering:	25%	1.9	●●●○○○
Operation:	20%	1.6	●●●●○○
Features:	20%	2.3	●●○○○○

Evaluation:
- ⊕ Temperature regulation/stability
- ⊖ Temperature setting

Entry level

Heimwerker Praxis 1/2018

Price/performance: Good

1,9

Advanced level

WE1010 from Weller

Weller is one of the most well-known manufacturers of soldering stations. This time we ran the test on a prototype.

Features

The WE1010 is set for market launch in the near future, so we took the opportunity to test it. This station has an impressive compact structure. All important operating elements are on the front of the device. The station is only missing a ground connection. The soldering iron has a short round tip with an effective heat capacity. With a length of 1.4 meters, this station has the longest power supply cable in our test.

Test

The WE1010 is a very high-quality soldering station as we have come to expect from Weller. It has good temperature values and a high heat capacity, which makes working with this station a pure joy. The soldering iron sits well in the hand and securely in the stand.

Heimwerker Praxis 1/18 Advanced level
TEST WINNER

Summary

A well thought-out machine offering everything a DIY enthusiast could wish for. We could find no fault with this station, making it our "Test winner". Congratulations!

Weller WE1010

Distribution:	Weller Tools, Besigheim (Germany)		
Price:			approx. €150
Tel.:			+49 (0) 7143 5800
Internet:			www.weller.de
Grade:			
Temperature:	35%	1.2	●●●●●○
Soldering:	25%	1.4	●●●●○○
Operation:	20%	1.4	●●●●○○
Features:	20%	1.0	●●●●●○

Evaluation:
- ⊕ Length of soldering iron cable/soldering
- ⊖ results
  No ground connection

Advanced level

Heimwerker Praxis 1/2018 **1,3**

Price/performance: Very good

Expert level

i-con 1 from Ersa

Ersa is also among the most well-known manufacturers of soldering stations.

Features

The i-con 1 is the only station in the test line-up that we allocated to the expert level. Its large display and clear menu guidance for a large variety of functions make this machine perfect for dedicated DIY enthusiasts or semi-professional use. All settings are made using the setting wheel in conjunction with the display, which also has an integrated button. The soldering iron stand is stable and the soldering iron fits securely in the holder. The round, long tip was also used for this test.

Test

This station has everything. The station and its soldering iron easily master all tasks. Only the heating of older soldering joints poses a challenge for the tip. In this case, we would also recommend the use of a shorter tip, so that this task also works without taking too much time.

Summary

A great station that only lost out to the eventual winner by a matter of decimal places. This device offers the best multifunctional capability of all devices tested.

Ersa i-con 1

Distribution:	Kurtz Ersa, Kreuzwertheim (Germany)		
Price:			approx. €330
Tel.:			+49 (0) 9342 8070
Internet:			www.kurtzersa.de
Grade:			
Temperature:	35%	1.3	●●●●○○
Soldering:	25%	1.5	●●●●○○
Operation:	20%	1.5	●●●●○○
Features:	20%	1.0	●●●●●○

Evaluation:
- ⊕ Menu guidance/features
- ⊖ Soldering tip

Expert level

Heimwerker Praxis 1/2018 **1,3**

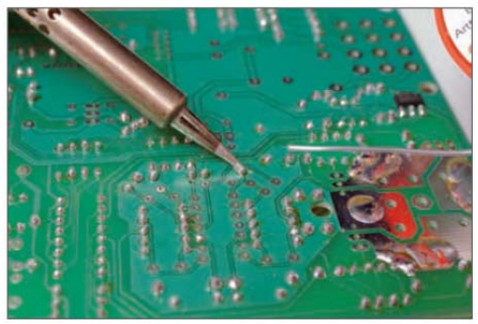
Price/performance: Good

Soldering stations		ELV LS-100D II Art. no. 127047	Lux Tools 55 W soldering station Art. no. 4048161	Monacor SIC-530 Order no. 31.1640	Toolcraft ST-100A	Weller WE1010	Ersa i-con 1
			Heimwerker Praxis 1/18 Entry level PRICE TIP			Heimwerker Praxis 1/18 Advanced level TEST WINNER	
Price:		**approx. €90**	**approx. €64**	**approx. €120**	**approx. €100**	**approx. €150**	**approx. €330**
Distribution:		ELV, Leer	Emil Lux, Wermelskirchen	Monacor, Bremen	Conrad, Hirschau	Weller Tools, Besigheim	Kurtz Ersa, Kreuzwertheim
Hotline:		+49 (0) 491 600888	+49 (0) 2196 76-4000	+49 (0) 421 4865-0	+49 (0) 9604 408787	+49 (0) 7143 5800	+49 (0) 9342 8070
Internet:		www.elv.de	www.lux-tools.com	www.monacor.de	www.conrad.de	www.weller.de	www.kurtzersa.de
Temperature:	**35%**	**1.7**	**1.5**	**1.5**	**1.7**	**1.2**	**1.3**
Soldering tip:	20%	1.7	1.3	1.5	1.8	1.3	1.4
Control:	15%	1.8	1.7	1.5	1.5	1.1	1.1
Temperature:	**35%**	**1.7**	**1.5**	**1.5**	**1.7**	**1.2**	**1.3**
Electronic components:	10%	2.0	1.8	1.8	1.9	1.5	1.6
Enameled copper wire:	5%	1.5	1.5	1.5	1.5	1.5	1.5
Tin plating of PCB tracks:	10%	1.6	1.8	1.6	2.0	1.3	1.3
Operation:	**20%**	**1.5**	**1.6**	**1.6**	**1.6**	**1.4**	**1.5**
Instruction manual:	1%	1.5	1.5	1.7	1.8	1.5	1.5
Actuating switch:	1%	1.5	1.5	1.5	1.5	1.5	1.5
Temperature setting:	4%	1.5	1.8	2.0	2.3	1.3	1.3
Soldering iron connection:	1%	1.5	1.5	1.5	1.5	1.5	1.5
Soldering iron cable length:	2%	1.5	1.5	1.5	1.5	1.5	1.5
Soldering iron balance:	1%	1.7	1.7	1.5	1.5	1.5	1.5
Soldering tip change:	2%	1.5	1.5	1.5	1.5	1.5	1.5
Soldering iron holder:	4%	1.5	1.8	1.5	1.5	1.5	1.8
Soldering iron holder stability:	4%	1.3	1.3	1.3	1.3	1.3	1.3
Features:	**20%**	**1.6**	**1.9**	**3.0**	**2.3**	**1.0**	**1.0**
Features:							
Rated voltage		230 V	230 V	230 V	230 V	230 V	230 V
Rated station power		100 W	55 W	55 VA	118 W	70 W	150 W
Station weight		1.85 kg	1.9 kg	1.55 kg	2.45 kg	1.6 kg	2 kg
Display		LED display	LED display	LED display	Diode	LCD display	LCD display
Temperature range		150–480 °C	200–480 °C	170–480 °C	150–450 °C	150–450 °C	150–450 °C
Fixed value setting		yes	yes	no	no	yes	yes
Rated voltage/power of soldering iron		32 V/100 VA	24 V/55 W	24 V/48 W	24 V/100 W	24 V/ 70 W	24 V/150 W
Soldering iron weight		95 g	90 g	145 g	80 g	100 g	65 g
Soldering tip shape (scope of delivery)		Round tip (long)	Round tip (long), chisel, flat	Round tip (long)	Round tip (long, fine)	Round tip (long)	Round tip (short), flat tip (narrow and wide)
Station dimensions (W x H x D)		90 x 105 x 126 mm	110 x 110 x 170 mm	120 x 95 x 180 mm	122 x 99 x 178 mm	120 x 100 x 145 mm	145 x 105 x 175 mm
Soldering iron stand dimensions (W x H x D)		77 x 110 x 135 mm	80 x 75 x 160 mm	Directly on the station	71 x 85 x 158 mm	75 x 115 x 155 mm	80 x 90 x 140 mm
Soldering iron dimensions (L x Dia. (handle))		190 x 15 mm	190 x 17 mm	200 x 30 mm	190 x 16 mm	215 x 19 mm	160 x 12 mm
Grounding socket		screw	yes	no	yes	no	yes
Soldering iron cable length		1 m	1 m	1.06 m	0.92 m	1.4 m	1.2 m
Soldering iron holder weight		260 g	207 g	155 g	300 g	410 g	255 g
		Entry level	*Entry level*	*Entry level*	*Entry level*	*Advanced level*	*Expert level*
Temperature:	**35%**	**1.7**	**1.5**	**1.5**	**1.7**	**1.2**	**1.3**
Temperature:	**35%**	**1.7**	**1.5**	**1.5**	**1.7**	**1.2**	**1.3**
Operation:	**20%**	**1.5**	**1.6**	**1.6**	**1.6**	**1.4**	**1.5**
Features:	**20%**	**1.6**	**1.9**	**3.0**	**2.3**	**1.0**	**1.0**
Price/performance:		**Very good**	**Very good**	**Good**	**Good**	**Very good**	**Good**
Heimwerker Praxis 1/2018		**1.6**	**1.7**	**1.9**	**1.9**	**1.3**	**1.3**

How we test:

To check the temperature accuracy, we compared the set temperature on the device with the temperature at the soldering tip and considered the variation. We soldered and unsoldered resistors, diodes and ICs, and removed components from old circuit boards. This enabled us to observe how the soldering irons handled fresh and old tin in varying quantities. On the soldering iron stands, we checked the stability of the stand and how securely the soldering iron was retained in the stand. Of course, price and features were also taken into account in the test result.

Due to the temperature characteristics of the long, narrow tip, we recommend that you increase the temperature before tin-plating larger surface areas or thick conductors



Thin soldering tips are most suitable for use on PCBs

Summary

Six soldering stations were tested, of which four devices were classified as entry level, and one device each as advanced and expert level. Apart from the test winner, all were equipped with long, round tips. These are well suited to soldering small components, however when warming older tin, they are more difficult to use than short tips. All stations offered the basic functions. The main differences lie in the stability of the soldering iron stands. In some cases, the soldering irons practically fall out. We were impressed by the new methods of cleaning the soldering iron: Copper wool instead of a sponge, or if a sponge was used, then this was more like a thin cloth. All in all, the test showed that each of the stations appears to perform its purpose, and the ultimate decision, as always, lies with you, our readers.

Dipl.-Ing. Olaf Thelen