

# Electronic Workbench on a Budget

By  
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# Basic Tools

- **Screwdrivers**
  - Cross point and Flat-head
  - Precision Screwdrivers
- **Pliers**
  - Slip Joint
  - Needle Nose
- **Wire cutters/strippers**
  - Wire Stripper
  - Diagonal Cutter
  - Flush Cutter



# Miscellaneous Tools

- Tweezers
- Light
- Magnifying glass
- ESD mat
- Nutdrivers
- Torx
- Files
- Nibbler
- Adjustable Wrench

# Soldering

- Solder station
- Solder
- Flux
- Solder braid
- Desoldering tool

# Solder Station

- Hakko 888D – Update version of the 936
- Hakko 936 – Most popular solder station, often copied. Now discontinued
- Weller WS-51
- Stick Irons – Avoid these if possible
- Circuit Specialists
  - Station 60 – this is the one I use
  - Station 75D – I also use this one

# Soldering Station



# Soldering (Cont'd)

- Solder
  - 60/40 or 63/37 – Rosin core only!
- Flux
  - Flux Pen – MG Chemicals #835-P or Kester #951
  - Flux – Liquid in a bottle w/brush or paste in a tin
- Solder Tips
  - Use chisel tips for most soldering, get a variety of widths
- Desoldering Tool
  - Handheld – about \$7.00
  - Powered vacuum desoldering tool - \$100 +



# Power

- **Bench Power Supply**
  - Adjustable voltage and current output
  - Displays voltage and current
- **Battery**
  - 12V Gel Cell – must be current limited!
  - LiPo battery pack – multiples of 3.7V
  - NiMH battery pack – safe and inexpensive, 1.2V
  - Alkaline battery pack – not rechargeable, expensive

# Multimeters - Budget

Aneng AN8008  
\$21.00



# Multimeter - Mid Range

Uni-T UT139C

\$42.00

I would consider this the minimum quality multimeter for electrical (not electronic) work



# Multimeter - High End

Fluke 17B+

\$117.00

Chinese market only but  
available from US sellers

Excellent quality, very good  
input protection and accuracy



Tool	Price	Source	Part Number
Hand Tools			
<a href="#">4 way screwdriver</a>	\$1.99	Harbor Freight	69470, 61988
<a href="#">Jewelers screwdriver</a>	\$3.99	Harbor Freight	47823
<a href="#">Pliers set</a>	\$9.99	Harbor Freight	63812
<a href="#">Flush cutters</a>	\$4.47	Amazon	Hakko CHP-170
<a href="#">Wire strippers</a>	\$1.89	Harbor Freight	36901
Soldering			
<a href="#">Soldering Station</a>	\$19.99	Circuit Specialists	CSI Station 60
<a href="#">De-soldering</a>	\$5.93	Amazon	Omorc
<a href="#">Solder</a>	\$3.59	Fry's	MG 4880-18G
<a href="#">Flux Pen</a>	\$9.95	Fry's	MG 865-P
Power			
12V Battery	Free		
Multimeter	\$21.00	Amazon	Aneng AN 8008
<a href="#">Multimeter 2</a>	Free	Harbor Freight	90899, 98025
<a href="#">Component tester</a>	\$10.00	eBay	Various
ESD			
<a href="#">ESD Mat and strap</a>	\$10.81	Amazon	Velleman AS4
<b>Total</b>	<b>\$103.55</b>		

# Questions?

Tnx and 73 de NV5E