WORKBENCH INSTRUMENTS AND TOOLS

APPENDIX L

Here are some electronic favorites, stuff that we really like using when we design and build electronic circuits. It's best to check current catalogs and websites – much of this sort of equipment becomes obsolete with terrifying speed.

Soldering iron
Metcal MX-500 (not cheap; it will change your life!)
Weller WSL (less expensive, variable temp)

Desoldering station
Pace MBT201-SD

Surface-mount prototype and rework
Zephyrtronics Airbath and Airpencil
Metcal offers SMT "tweezers" and other goodies

Bench DMM
Keithley 2100 ($6\frac{1}{2}$-digit, with USB control & readout)
Agilent 34410A ($6\frac{1}{2}$-digit, with LAN & USB control & readout)

Pocket DMM
Amprobe 37XR-A (cheap, good enough)
Fluke 289 (not cheap, very good)
Agilent U1252A/53A (everyone's favorite lately)
"Smart Tweezers" (auto-ranging SMT tweezer-style meter, neat!)

Triple bench power supply
HP E3630A (excellent performance, reasonable price)

High-voltage bench power supply
SRS PS300-series (single and split, to 20 kV)

Device programmer (if needed; JTAG in-ckt is taking over, pods from mfgrs)
BP Microsystems 1610 (universal and reliable; lifetime free algorithm updates)

LCR meter
HP 4263B (a cheaper one is the SRS model SR720)

Analog oscilloscope
B&K Precision and Hameg still offer some models, to 200 MHz bandwidth

Digital oscilloscope
Tek DPO2024B (cheap "lunchbox"); DPO/MSO 3k-, 4k-, 5k-series
Agilent DSO/MSO 5k-, 6k-, and 7k-series (Agilent's answer to the "lunchbox")
Lecroy WaveRunner, WaveSurfer, WaveJet series (lot of models, do your homework)

Arbitrary function generator
Tek AFG3000-series (single and dual channel, to 240MHz and 2Gs/s)

Low-distortion function generator
SRS DS360 (0.01 Hz–200 kHz, 0.001% distortion)

RF and microwave synthesizer
Agilent N9310A
SRS SG380-series (2, 4, and 6 GHz models, low phase noise, see §13.13.6B)

Low frequency spectrum analyzer
SRS model SR785

RF spectrum analyzer
Agilent ESA series (depends on frequency range, and $$)

Source measure unit
Agilent B2900-series (single and dual channel)
Keithley 2600-series (single and dual channel)

Precision time and frequency standard
Symmetricom 4411A (uses GPS constellation)

Engineering software
Altium System Designer, OrCad, or Eagle (for schematic capture and layout; includes simulation)
Xilinx WebPack (for PLD and FPGA design), and analogous tools from Altera, Lattice, Actel, etc.
ICAP/4, LTspice ($0!), MicroCap 9, MMICAD, PSpice (for simulation)
FilterCAD ($0!, from LTC), FilterPro ($0!, from TI) (simple analog filter design)
MathCAD, MATLAB, Mathematica (engineering/math worksheets)
LabVIEW™(virtual instruments; control of real instruments)